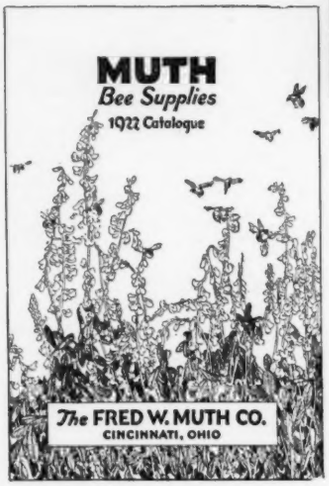
READING ROOM

AMERICAN BEE JOURNAL

APRIL 1922

SCENE ON THE EAST COAST OF FLORIDA. PALMETTOES ARE RICH IN NECTAR.
(Photo by Florida Photo Concern).



You need our 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements

to us

THE FRED W. MUTH COMPANY

Pearl and Walnut Sts., Cincinnati, Ohio

THE DIAMOND MATCH CO.

(APIARY DEPT.)

MANUFACTURERS OF

Beekeepers' Supplies

CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

EASTERN DISTRIBUTORS

HOFFMAN & HAUCK, 1331 Ocean Ave.
WOODHAVEN, N. Y.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to the Diamond Match Co. for prices and for their Beekeepers' Supply Catalog.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

ALUMINUM HONEYCOMBS

The Diamond Match Co. and their agents are the sole distributors in the United States of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Calif. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to **Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.**

DIAMOND MATCH CO., Apiary Department

CHICO, CALIFORNIA

FOR REAL SUCCESS YOU SHOULD BUY

WOODMAN INNER OVERCOAT HIVES

Protected Bees Work Day and Night It has been shown by careful observation that maintaining a temperature of 98 degrees permits comb building to go on **both day and night.** The bees will thus devote more daylight time to gathering honey.

Larger Honey Crops are Assured The bees are enabled to rear brood earlier in the spring, with no danger of chilled brood on account of cold snaps. One bee in March is worth one hundred in July. The early bees produce the early swarms, that get the large honey crops. Therein lies success or failure.

You will Practically Eliminate Winter Losses With your colonies in normal condition, (that is, with plenty of good stores, a young queen and young bees) you will be able to winter practically 100%.

The Inner Overcoat Hive will Last a Lifetime, as the outer hive walls are the same thickness as in the single wall hive. In other words, **Woodman** Inner Overcoat Hives are **a lifetime investment—not an expense.**

Out-of-Door Wintered Bees Have Many Advantages over cellar-wintered bees. They do not spring-dwindle and are stronger at the opening of honey flow.

Insures Close-up Protection A person may have any amount of blankets fastened up to the wall of his room and still freeze to death if left in the center of the room without **close-up protection or insulation. The close-up protection in the Inner Overcoat Hive is** what does the trick.

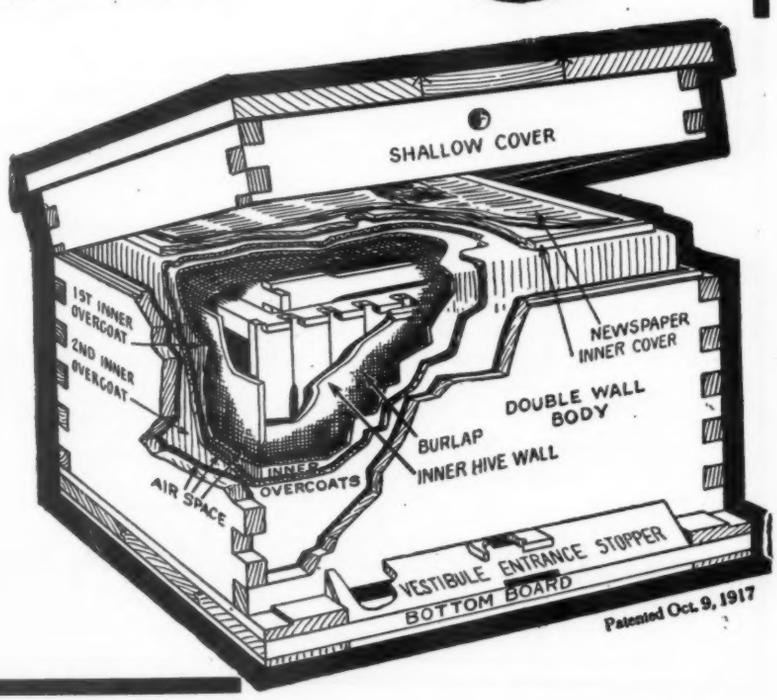
HOW TO USE

PROTECTION HIVES

When the bees are to be prepared for winter, remove the cleats which close up the insulating space. Then telescope one or more bottomless corrugated paper box insulators between inner and outer hive walls. Spread a piece of burlap or sacking material over the hive so that it will be carried down with the Inner Overcoats in telescoping them over the inner hive wall, having the effect of wrapping the brood nest in a blanket. These Inner Overcoats, with their air spaces, afford more protection than several inches of ordinary packing materials, and this is all secured in an insulating space of about one inch.

WOODMANS FAMOUS BEE-WARE

SPECIAL circular on Woodman's Protection Inner Overcoat Hive, showing ten large illustrations, sent on request.



A. G. WOODMAN COMPANY

SOLE MAKERS

240 Scribner Ave., N. W.

GRAND RAPIDS, MICH., U. S. A.

A SUPERIOR QUALITY AT LESS COST

SUPPLIES

A SUPERIOR QUALITY AT LESS COST

(MADE BY THE DIAMOND MATCH CO.)

One Story Complete Dovetailed Hives

With metal telescope cover, inner cover, reversible bottom Hoffman frames, nails rabbets.

STANDARD SIZE

Crate of five, K. D. 8-frame ---------- $12.65
Crate of five, K. D. 10-frame ---------- $13.25

JUMBO SIZE

Crate of five, K. D. 10-frame ---------- $14.25

HIVE BODIES

With Hoffman frames, nails, rabbets.

Standard size, crate of five, K. D. 8-frame ---------- $5.20
Standard size, crate of five, K. D. 10-frame ---------- 5.85
Jumbo size, crate of five, K. D. 10-frame ---------- 6.85

HOFFMAN FRAMES

Standard size ---------- 100, $5.20; 500, $25.00
Shallow ---------- 100, $4.30; 500, $21.00
Jumbo ---------- 100, $5.80; 500, $28.00

DIAMOND BRAND FOUNDATION

Medium, 5 lbs. 68c lb.; 50 lbs. 65c lb. Thin super, 5 lbs. 75c lb.; 50 lbs. 72c lb.

Aluminum Honey Combs, as now made by Duffy-Diehl Co., are meeting with success. We carry these in stock to supply eastern beekeepers.

Standard Langstroth ---------- $5.00 box of 10
Shallow Extracting ---------- $4.00 box of 10
Jumbo ---------- $6.00 box of 10

GLASS AND TIN HONEY CONTAINERS

2½-pound cans, 2 dozen reshipping cases ---------- $1.45 case; crates of 100, $5.00
5-lb. pails (with handles), 1 dozen reshipping cases -- $1.35 case; crates of 100, $7.75
10-lb. pails (with handles) ½ doz. reshipping cases -- $1.10 case; crates of 50, $5.75
60-lb. tins, 2 per case—new $1.30 case; used, 25c.

WHITE FLINT GLASS, WITH GOLD LACQUERED WAX LINED CAPS

16-oz. honey capacity, ---------- $1.40 per carton of 2 doz.
Quart 2-lb. honey capacity ---------- $1.00 per carton of 1 doz.

HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.

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Lewis 4-Way Bee Escapes

Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial material. Price each 18c, postpaid.

Made by
G. B. LEWIS COMPANY
Watertown, Wis., U. S. A.
For Sale by All Dealers.

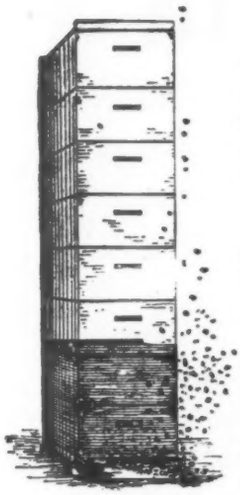
BEES AND QUEENS

Tested Italian queens	$2.00
Hybrid queens	1.00
Queens only with nuclei.	
2-frame nuclei—Italian	3.50
2-frame nuclei—Hybrid	3.00
3-frame nuclei—Italian	5.00
3-frame nuclei—Hybrid	4.00

Add price of queen, if wanted with bees. Shipment begins April 1, 1922. No disease ever known in county. Satisfaction or money returned.

DR. J. D. SHIELDS, Rt. 2 Natchez, Miss.

WHAT WILL THE HARVEST BE?



Do you know why your honey crop is sometimes a failure? The season is not always to blame. In the best seasons it takes the best queens. Are you preparing for a good season? Then you will requeen from some thrifty strain of bees.

Don't save 10 or 15c on a queen and lose your crop of honey. An inferior queen cannot meet the demands of a good season. You find this out after it is too late to save the crop.

When you buy queens—the factor that will make or lose your honey crop—do you **guess** they are good, or do you buy the kind that have been tested for 29 years by America's greatest honey producers?

FOREHAND'S THREE-BANDS

The Thrifty Kind

take the guess out of buying queens. They have stood the test in six countries and in almost every State in the Union. Years of careful breeding have brought them up to a standard **surpassed by none but superior to many.**

Get a copy of our 1922 booklet, "Our Crow," and read what others say about our bees and service.

We guarantee pure mating and perfect satisfaction the world over. Safe arrival is guaranteed in the U. S. and Canada.

Prices

	1	6	12	100 Each
Untested	$1.50	$7.50	$13.50	$1.00
Select untested	1.75	9.00	16.50	1.25
Tested	2.50	13.00	24.50	2.00
Select tested	4.00	22.00	41.50	3.35

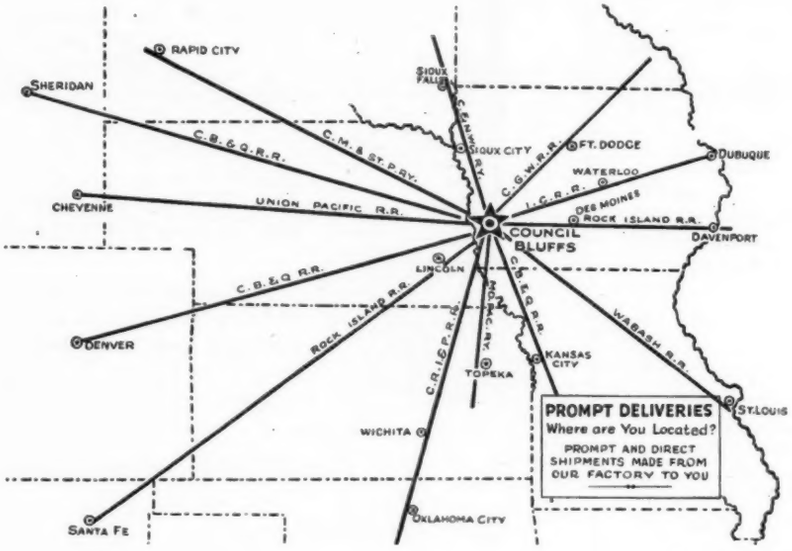
Pound Bees to June 30

	1	25 or more
One-pound package	$2.75	$2.50
Two-pound package	4.75	4.50
Three-pound package	6.75	6.50

Add the price of queen wanted.

W. J. FOREHAND & SONS
FT. DEPOSIT, ALA.

ARE YOU IN A HURRY?



¶ Time is the essential factor in your success.

¶ Great care is taken that Root Quality Bee Supplies get to you promptly. We are clipping every possible minute off the schedule of deliveries.

¶ Special attention is given to orders, that each routing be over the shortest route. Motor delivery and fast trains bring your shipment direct to you in least possible time, at least possible expense.

¶ Our dealers are getting replenishment orders over this network of roads, in quantity lots. "There is a Root dealer near you." Look him up.

¶ Today our dealers, and the Council Bluffs organization, renew our purpose to give your business individual attention and prompt execution.

AT YOUR SERVICE

Foster Honey & Merc. Co.,
Boulder, Colo.

The Wertz Seed Co.,
Sioux City, Ia.

Griswold Seed Co.,
Lincoln, Neb.

The Borton Apiaries,
Scotland, S. D.

The Rapid City Implement Co.,
Rapid City, S. D.

Rodman Sales Co.,
Kansas City, Mo.

Carl F. Buck,
Augusta, Kans.

The Stiles Bee Supply Co.,
Stillwater, Okla.

Roswell Seed Co.,
Roswell, N. M.

The Lodge Grass Apiaries,
Lodge Grass, Mont.

R. A. Bray,
Big Timber, Mont.

THE A. I. ROOT CO. OF IOWA
COUNCIL BLUFFS, IOWA

TRANSFERRING BEES TO MODIFIED DADANT HIVES

By G. H. Cale

There is some hesitancy in the use of large hives since many have their bees already housed in hives of less capacity, or of different dimensions. It cannot be denied, however, that the large hive idea has become permanent in the minds of beekeepers, since the sound principles back of its use are constantly demonstrating themselves. A few suggestions, therefore, to help overcome the difficulty of transferring to such hives will be welcome.

To begin with, there is no difficulty. It is an easy matter to transfer, even when the hive dimensions are not alike. In transferring to the modified Dadant hive, the most satisfactory results are obtained when the colony is in the prosperous and favorable period of brood rearing preceding the honey flow. Transferring at other times is slow, unsatisfactory and inadvisable.

The process is simple. Set the colony to be transferred from its stand and put the new hive in its place. Take the queen with two frames of brood from the old hive and place them in the new one, at one side. If the frames are shorter than the Langstroth, strips may be nailed to one end of the top bar. Supply the remaining space with the large frames, fitted with foundation, put on a queen excluder and set the old colony on top. In three weeks the brood will all have emerged and the hive may be left as a super or removed. The old frames in the large body may also be taken out and replaced with foundation.

In transferring weak colonies, they may be considered as nuclei and placed, frames and all, in the large hives, using only those frames which contain brood. If the shallow frames are kept at one side they may be gradually removed, as the bees draw out the foundation and spread over to the larger frames. This is a slow process, however, and it is more satisfactory to let the weak colonies become strong before attempting their transfer.

EARLY QUEENS

Mr. Beekeeper, if you are in need of early queens, send your order to L. L. Forehand. He can supply you with queens by return mail after April 15.

You are not experimenting when you buy his queens, for they have been on the market for twenty years. They are giving satisfaction in every State in the Union, Canada, Mexico and nearly all foreign countries.

They are bred from imported stock, Americanized and improved in my yards under my own care.

They cannot be beaten for honey gathering. They are highly resistant to diseases, extra prolific, very gentle, beautiful, and not inclined to swarm.

GUARANTEE

I guarantee every queen to reach her destination alive, to be in first-class condition, to be purely mated and to give perfect satisfaction, or I return your money.

Safe delivery guaranteed in the U. S. and Canada only.

PRICES

	1	6	12	100 Each
Untested	$1.50	$ 3.50	$13.50	$1.00
Select untested	1.75	9.00	16.00	1.25
Tested	2.50	13.00	24.50	2.00
Select tested	4.00	22.00	41.50	3.25

Send for circular.

L. L. FOREHAND, Ft. Deposit, Ala.

MAY PACKAGE BEES MAY

With untested 3-band Italian queen; 21 years of experience enables me to breed queens that get results.

2-lb. package.....$4.25. 3-lb. package.....$5.50. Deduct 50c each for hybrid bees. No disease in county. Bees shipped by express in May, 25 per cent with order and balance before shipment. Safe arrival guaranteed.

BRUCE ANDERSON, Bath, N. C.

HUBAM 50c A POUND

We have a few hundred pounds of Hubam Clover Seed left, and we are offering it at 50c per pound, f. o. b. Ames, for any amount over 10 pounds; 75c a pound for smaller quantities, prepaid.

This is for Genuine Hubam Clover Seed of good quality, that has been hulled and scarified at the Iowa State College, here at Ames.

We will pay the express to any point in the United States on 100 pounds or more. Get your neighbors to grow Hubam this season, if you have to give them the seed. Remember,

THE MORE HUBAM THE MORE HONEY; THE MORE HONEY THE MORE MONEY

BLAIR BROTHERS ROUTE 4 Ames, Iowa

BEEKEEPERS LEGAL RIGHTS

The American Honey Producers' League has accepted the offer of Mr. Colin P. Campbell, of Grand Rapids, Mich., to compile and make a digest of all of the court decisions affecting the bee business and the legal questions arising from beekeeping.

This work will be published by the League in booklet form and will be sold to beekeepers, who will thus have available a handy reference book in case of legal difficulty or unjust discrimination. It will cost about $500 to publish this work. Will you help? Donations are requested from beekeepers everywhere, and from dealers in honey or bee supplies. Make checks payable to American Honey Producers' League and mail to Secretary, San Antonio, Texas.

You can have again the world-wide fame pure

CARNIOLAN ALPINE QUEENS

from their mother country. That's the race. No more recommendation is necessary. The prices of my select tested Carniolan Alpine Queens are: March, April and May, $5; June-July, $3.50; August, $3; September-October, $2.50. By your taking 12, 50, 100 or more, the price is lower. Safe arrival guaranteed. Price list free. Order in time.

Export of Carniolan Alpine bees to all parts of the world. Finest and largest in Carniola. Awarded 64 Honors.

JAN STRGAR

BITNJE, P. O. BOHINJSKA BISTRICA, UPPER CARNIOLA, S. H. S. EUROPE

TENNESSEE-BRED QUEENS

Fifty Years' Experience in Queen-Rearing
Breed Three-Band Italians Only

	Nov. 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested	$2 00	$ 8 50	$15 00	$1 50	$ 7 50	$13 50	$1 25	$ 6 50	$11 50
Select Untested	2 25	9 50	18 00	1 75	9 00	16 00	1 50	7 50	13 50
Tested	3 00	16 50	30 00	2 50	12 00	22 00	2 00	10 50	18 50
Select Tested	3 50	19 50	35 00	3 00	16 50	30 00	2 75	15 00	27 00

Select tested, for breeding, $7.50.

The very best queen, tested for breeding, $15.

Capacity of yard, 6,000. I sell no bees by the pound or nuclei, except with high-priced tested and breeding queens.

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

JOHN M. DAVIS, Spring Hill, Tenn.

"Five colonies of your stock produced 2,660 finished sections—the best one 616 finished sections." JOHN M. BIXLER, Corning, Iowa, February 1, 1921.

CARNIOLANS

are the best of winterers. At approach of winter they settle down into a very compact, quiet cluster and remain so through the winter, coming out in the spring with but little loss of bees, and vitality unimpaired, if well protected. Ask for my free circular describing their merits more fully.

Have your bees wintered satisfactorily?

A. G. HANN, Glen Gardner, N. J.

HUBAM

200 BUSHELS DISTRIBUTED YOUR Opportunity FREE

Grow this wonderful Clover. Plant field at our expense. Seed produced where plant originated, under the direct supervision of H. D. Hughes. 20c for large packet of seed, full information regarding our offer, and the book "Hubam Clover, What, Where, Why?" Wonderful reports from growers in your section and other information sent FREE. Lowest prices. Transportation paid. None better. ALABAMA HUBAM CLOVER ASS'N, Inc., Box 622, Newborn, Ala.

SELECT ITALIAN QUEENS

Red clover strain; prolific, gentle and great honey gatherers. Get your order in early; will have them to ship after March 10. Untested, $1.25; select untested, $1.50; tested, $2.50.

Write for price on package bees.

V. G. MILLER, Mathis, Texas.

We are the HUB for HUBAM

Guaranteed, certified, Annual Sweet Clover. All new crop, grown on our own farms and all from the first 50 seeds from that original plant at Ames.

We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8 per cent, and grows 97 per cent. Price now is $2 per pound.

Our seed is pure. You buy from an old, established firm with a reputation to maintain when you buy from us.

With each and every order for Hubam bought at the above price, we will include, free, a can of nitrogen pure culture bacteria, which will insure the proper growth of the Hubam plant.

THE HENRY FIELD SEED CO.

SHENANDOAH, IOWA

MONEY AND SATISFACTION FOR YOU

Save one profit by buying direct from factory. Standard, Jumbo and Modified Dadant Hives; cedar or pine. Write for catalog.

A. E. Burdick Co., Sunnyside, Wash.

Paint Without Oil

Remarkable Discovery That Cuts Down the Cost of Paint Seventy-five Per Cent.

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a free trial package will be mailed to you, also color card and full information showing you how you can save a good many dollars. Write today.

THE BOOK YOU SHOULD BUY

C. P. Dadant has recently revised and rewritten Langstroth's classic book on the Honeybee. The book now contains the best from three widely known writers on beekeeping, Langstroth, Charles Dadant and C. P. Dadant. The new edition has 448 large size pages and sells for $2.50.

American Bee Journal, Hamilton, Ill.

FLORIDA FIRST

QUEENS

INDIAN RIVER APIARIES

WILSON, FLA.

See advertisement in classified department.

PORTER

BEE ESCAPE SAVES HONEY TIME MONEY

For sale by all dealers

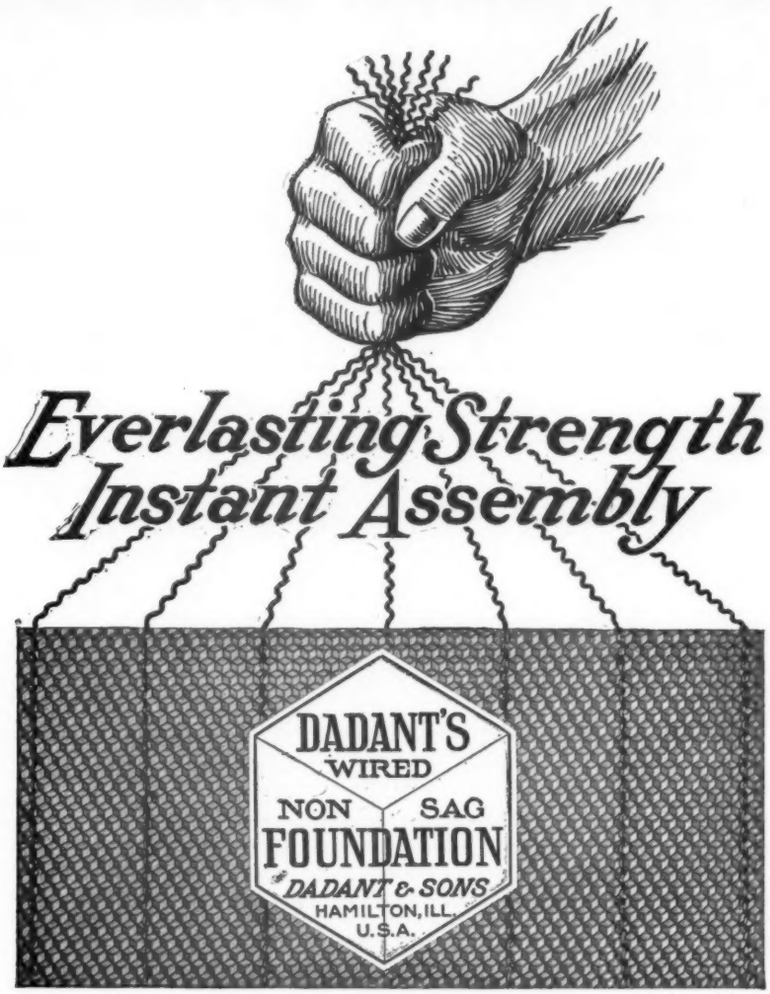
If no dealer, write factory

R. & E. C. PORTER, MFRS.
Lowistown, Illinois, U. S. A.

(Please mention Am. Bee Journal when writing)

NON-SAG REINFORCED FOUNDATION

A REAL SUCCESS AT LAST



Makes Non-Sag All-Worker Comb

Quickly Accepted by Bees Without Reservations

Everlasting Strength
Instant Assembly

Cuts Out Cost and Labor of Hand Wiring

The Finished Comb a Delight to the Eye

PATENTS PENDING

TESTED BY TIME AND USE. Dadant's Wired Foundation is not an experiment of a few months' time, but is a carefully evolved specialty of a life-time of foundation specialists. It has also been thoroughly tested for several years in large apiaries in all parts of the United States.

ITS USERS ARE ENTHUSIASTS. We have dozens of statements like the following:

"I have tried Wired Foundation this year under the same conditions with foundation wired horizontally. Every frame of the old style foundation sagged badly, but the Wired Foundation made perfect combs. I have 75 big hives in use now and not a comb in a single one of them is anywhere near as perfect as those I have had drawn from Wired Foundation. **I call it the greatest improvement modern beekeeping has had for many years.** PORTER C. WARD, Allenville, Ky.

DADANT'S WIRED FOUNDATION may be used in new-style split bottom-bar frames or in the old style one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES. A small mailing sample sent free on request. A sample of seven sheets, for either split bottom-bar or old style one-piece bottom-bar frames will be sent, postpaid, to any address in the United States for $1.00. Specify size desired.

DADANT & SONS, Hamilton, Illinois

Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering, for the asking.

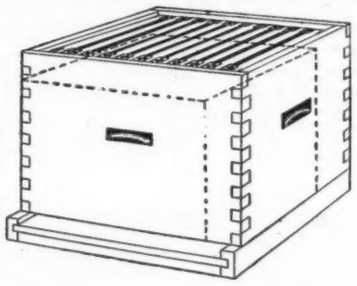
DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about 11¼ inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the 1½ inch spacing from centre to centre of the frames. This is the **real principle** to be considered in the

MODIFIED DADANT HIVE

(REGISTRATION APPLIED FOR)



Modified Dadant Hive	
Hive	$5.65
Two Supers	3.30
Total	$8.95

Langstroth Hive	
Hive	$ 3.95
Three Bodies	5.70
Excluder	.70
Total	$10.35

¶ Consider the cost of the only hive which has these principles made into it as does this commercial beekeeper known all over North America. (See price comparison above.)

1351 Carson St., Victoria, B. C., Canada
January 25, 1921

Dadant & Sons,
Hamilton, Illinois

Gentlemen: In your catalog you say the price of a Dadant Hive may seem high, but that refers to body only. To me a complete hive is one that has all the requisites for the production of one hundred pounds of honey. In the case of a Dadant Hive it means one brood chamber and two supers. In case of the ordinary hive as now managed it means four stories, two of these being for brood chamber. Just itemize the total cost of a complete hive, and I think you will find the Dadant Hive leading by a few dollars.

Yours sincerely,
F. DUNDAS TODD.

The Large Hive for Extracted Honey Production

Among the reasons why the Modified Dadant hive deserves a trial, especially where present equipment is not giving satisfaction are:

Deep frames 11¼ inches. Frame space ventilation, swarm control easier, 6¼ in. extracting frames.

Large one-story brood nest, adequate winter stores, greater brood room, standard covers, bottoms.

Present equipment may be used as super equipment on Modified Dadant brood chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

The standard of workmanship is "Beeware." Write for free booklet on this hive to

G. B. LEWIS COMPANY, Watertown, Wis.
DADANT & SONS, Hamilton, Ill.

There's a Distributor near you

AMERICAN BEE JOURNAL

VOL. LXII—NO. 4 HAMILTON, ILL., APRIL, 1922 MONTHLY, $1.50 A YEAR

AN OLDER GENERATION OF BEEKEEPERS

By Alois Alfonsus
Editor "Der Bienen Vater," Austria.
Translated by C. W. Aeppler.

IN the German north, in the Province of Braunschweig and Hanover, beekeeping has been successfully carried on for several centuries. A number of beekeepers own the inherited locations, and practice beekeeping according to the methods of their forefathers, still using the old straw skep, but when the financial results of the modern beekeeper are considered, offer keen competition, indeed. The beekeepers of the Luneburger Heide, are, however, very intelligent people, who have in fact studied all the details of modern beekeeping equipment, in so far as they fit into their system of beekeeping. Their bees are extremely prolific, great swarmers, the result of centuries of selection and breeding.

The straw skeps used by the skep beekeepers are manufactured by themselves during the winter months, and are very durable. It is not uncommon to find straw skeps in active use that are over 100 years old.

"In the old skeps one finds the best colonies," says the skep beekeeper.

The skep beekeeper takes advantage of every opportunity to practice migratory beekeeping. In early spring he visits the meadows of the River Elbe, where willows abound; he visits the edges of forests, where the huckleberry blooms; fields of rape, woods of acacia; in July he migrates to the buckwheat fields, and in the fall to the heather.

His entire system is arranged to take care of the many swarms that obtain during the summer, and the increase in the number of the colonies is enormous. Beekeeping is learned the same as any other occupation. The student must first work, for a prescribed time, with a successful beekeeper, before he can hire out for pay. The skep beekeeper takes 60 skeps as a unit, called a "Lodge," the same as one would take a dozen eggs as a unit. These 60 colonies, in the course of a summer, increase to three or four hundred.

The skep beekeeper saves all the wax very carefully. The wax must cover all expenses for the year. The honey obtained represents the profit.

Making artificial increase with skeps.

In the spring, the skep beekeeper practices intensive stimulation. The honey that he feeds is saved over from previous years. He takes combs of sealed honey that also contain pollen, mashes them all up and separates out the wax. This butter-like honey he thins with warm water and, beginning with April, the colonies are fed a portion of this every night. The feed is placed under the skeps. In carrying up the feed, heat is generated and the queen is induced to lay rapidly. The skep beekeeper always keeps in reserve enough honey to feed his bees for three ordinary spring seasons in case an unfavorable spring should be encountered. The colonies are stimulated until they cast their first swarms. He also practices equalization of the colonies in spring. The skep beekeeper very seldom has any weak ones. However, occasionally one does not build up as expected. The beekeeper takes shallow pans partly filled with candied honey, shoves these under the strong colonies toward evening. In about ten minutes the pans are covered with bees, and are then pushed under the weak colonies. In a few days all colonies are of about equal strength. This equalization of colonies also tends to shorten the swarming period.

All colonies cast a first swarm, and two or three after-swarms. The swarms are caught at the entrance by means of a swarm catcher. When no honey is coming in, the bees are fed. From the first to the middle of July, the second swarming period comes. The first swarms from the parent colonies now cast their first swarms, and so the swarming goes on. Those

Large apiary in skeps

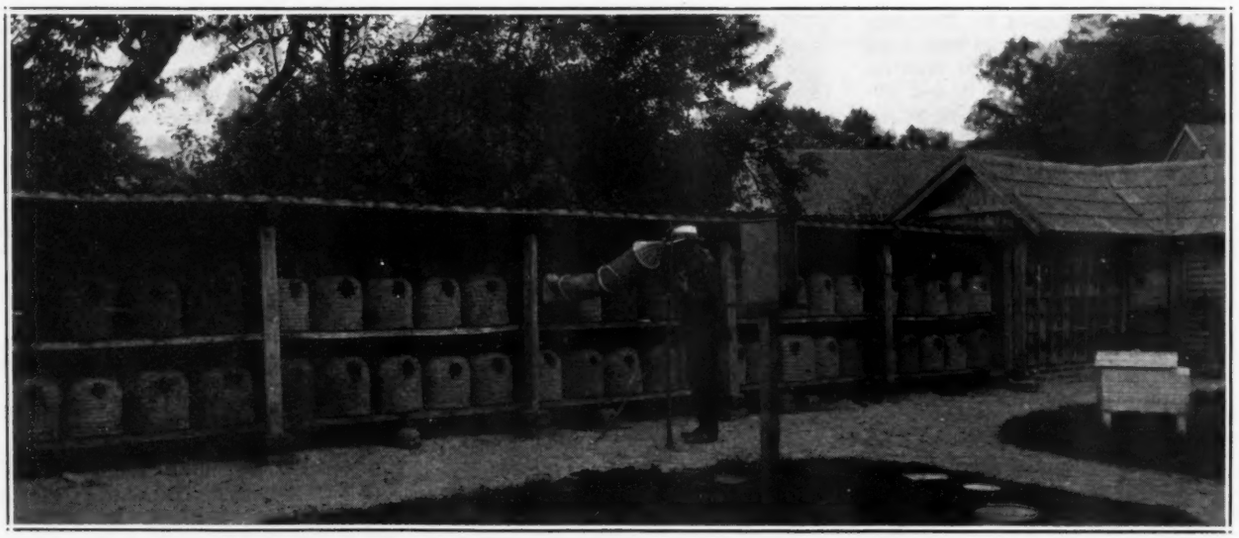
that do not swarm are forced from their homes by pounding with the flat of the hand on the inverted skeps, with a second skep placed on top. The swarm so secured is given a new stand. In the evening the parent colony receives a queen introduced by the smoke method. This smoke method of introducing has been practiced for generations. The skep beekeeper's queen-rearing methods are simple. He uses miniature skeps, called "Potten," which have a capacity of about 1½ L. combs, in which he puts small afterswarms. The best of cells from colonies that have swarmed are employed. and, when the queens are mated, are easily found in these small skeps. These small skeps are in reality the forerunners of nuclei as used by queen breeders.

One would think that the combs in these skeps would consist largely of drone comb. This is not the case, and the skep beekeeper will tolerate only a very small amount at the tips of the combs. About every three days he goes from skep to skep, and with a flat pincer squeezes the newly built drone comb to a flat sheet, and with a second pincer, provided with a miniature foundation plate of worker cells, he presses out beautiful worker foundation, which the bees at once work upon. In this way he secures practically perfect worker comb in all of his skeps.

The big event of the year is moving to the heather. This lasts from August until October. Here the earth is carpeted with the rose-colored bloom. Special trains carry thousands of colonies, and there are many beekeepers who own 1,000 colonies. If a beekeeper has wintered over three "lodgs," or 180 colonies, he usually takes 100 colonies to the heather. These become heavy as lead, and a good crop of honey is usually secured. When the skep is fairly well filled, a straw rim is placed under the skep to allow for more room. The honey secured from the heather is among the most prized honey on earth.

The skep beekeeper winters over only colonies that are headed by queens of the current year. Very seldom does he winter over two-year-old queens, and then only for breeding purposes. He chooses only those colonies that have the proper amount of winter stores, and only those colonies in which the combs are practically perfect. Inasmuch as he has so many colonies to choose from, he can pick out the best. Many of the remaining skeps are shaken and the bees sold in the manner of pound packages. Many German beekeepers buy bees to strengthen their colonies

Melting up the combs from skeps.



Hiving swarms with swarm catcher.

Class in beekeeping at Suderburg.

for winter. What remains are brimstoned. This may seem cruel, but there is no other way.

The skep beekeeper is a person of great intelligence, yet the movable-frame hive has been little adopted. He stays by the old skep for several reasons. The skeps are the cheapest homes of the bees, and he makes them himself during the winter months. The race of bees he has bred for centuries are great swarmers. Perhaps the main reason is that the heather honey obtained in the fall is so heavy that it cannot be extracted. The combs break in the extractor, for the honey is so heavy in body as to resemble gelatine.

The skeps from which the bees have been removed are stored in a room specially arranged for that purpose. The combs are removed and carefully sorted. All old combs containing honey and pollen are saved for feeding purposes. The new comb in which no brood has been reared is treated as comb honey, and sold in this way. Suitable sized pieces are wrapped in parchment paper and packed in tin, and sent to the large cities, where there is a big demand for heather honey. One peculiarity of the heather honey is that when the combs are cut, the honey does not run out of the cells, where cut, so heavy-bodied is the honey. The balance of the combs not used as above are simply put through a press and the honey secured carefully strained. The combs are pressed cold, so the honey does not have a wax flavor.

The system and cleanliness of the skep beekeeper is proverbial. Many a modern beekeeper could learn a great deal from these really practical people. While the straw skep is a forgotten relic with modern beekeepers, yet it seems to be best for their system.

(It may be well to explain that the German movable frame hives are exceedingly clumsy and difficult to handle, which undoubtedly explains the preference for the skep. Most of the movable frame hives are located in the walls of a bee house, with a very shallow super on each; tiers upon tiers being in the same wall. The hives are not top-opening, but open either on the side or on the end, so that it requires a heavy pair of pincers to pull the frames out. Those pincers may be found advertised in every catalog of bee supplies. When Professor Cook visited Germany a number of years ago, he was astounded at the backwardness of the system, and made his friends over there very angry by criticizing their clumsy methods, and advising them to try the American methods.—Editor).

ARTIFICIAL EGG FERTILIZATION

Mr. E. M. Cole, of Audubon, Iowa, recently called my attention to the fact that the artificial impregnation of so-called "drone eggs," as set forth by Gilbert Barratt in the American Bee Journal, December, 1919, page 415, is not a new idea, but that Langstroth reported such a case. The statements referred to appear on the first page of the appendix in the 1914 reprint of the original, and on page 41 of Langstroth's third edition. The latter reference reads: "Dr. Donhoff, of Germany, in the summer of 1855, reared a worker larva from a drone egg, which he had artificially impregnated." Langstroth himself had attempted the same thing in 1852, without success, but still held to the opinion that it could be accomplished under favorable circumstances.

Apparently this paragraph has been omitted from the recent revisions of Langstroth, but now that the subject is receiving considerable attention, would it not be desirable to incorporate it in the next revision?

Wallace Park.

(The reason why the experiment in question was left out of the Langstroth-Dadant revision was that Mr. Langstroth had failed, and that we feared Donhoff had been mistaken. But the incident was entirely forgotten by me, and I thank you for recalling it.

It is now too late to incorporate it in the new revision, which is just out. But later we may be able to add not only this, but also additional facts. I do not believe that the eggs which a queen drops involuntarily have ever been cared for by experimenters to ascertain whether they are fertilized or not. If it has been done, has the result been invariably the same, and what was the sex? These questions have a scientific and perhaps practical importance.—Editor).

Straw skep 136 years old.

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THE EDITORS' VIEWPOINTS

THE EDITOR'S ANSWERS

This department is proving very useful, when the questions asked are such as cannot be found readily in the text-books. Many questions puzzle the editor, who is supposed to always know the proper answer, but often finds himself as much in the dark as the man who enquires. This compels him to seek authorities and to learn also, while trying to teach others.

Greater benefit may be secured from the answers, if the questions are properly put, in good order, and avoiding mixing other information, unless it pertains to the question asked. Classify your questions, number them, write on one side of the page only, but avoid asking any question the answer to which may be found in a text-book. Then we will secure information valuable to everybody interested.

MOVABLE-FRAME HIVE INVENTIONS

Some anonymous friend sends us a marked copy of the South African Bee Journal for November last, with the following passage marked by an interrogation point:

"Langstroth is credited with being the inventor of the movable frame in the hive, which he patented on October 5, 1852, yet in Huish's 'Treatise on the Nature and Management of Bees," published in 1817, there is an illustration of a movable-frame hive."

There were many frame hives before the invention of those described by Huish, as also there were several invented between Huish's time and Langstroth's. But in no case were these inventions practical. The advantage of the Langstroth hive, which has caused it to be almost universally adopted throughout the world, was the space of about three-eighths of an inch or "bee space" between the ends, top and bottom of the frames and the hive body or top and bottom, as well as the manner of hanging the frames in the hive. The top opening feature was also a part of his invention, and it enabled the apiarist to remove the frames without having to use pincers, as many beekeepers yet do in central Europe, with side-opening, closed-top hives. So the only practical movable-frame hive was invented by Langstroth. Before this invention the movable-frame hives might better have been called "immovable."

A GOOD IDEA

At the Provincial Fair of British Columbia, to be held at New Westminster, in September, a prize will be offered for the best collection of native honey plants. W. H. Turnbull reports that the schools are taking it up and that there is much interest manifested. It looks like all the children in the Fraser Valley would spend their spare time this summer chasing bees to learn what is and what is not a honey plant. This will serve a good purpose in teaching the youngsters to observe and at the same time may bring to light some new information concerning the honey flora of that region.

THE MILLER MEMORIAL FUND

While the response to the requests for aid in the establishment of this library in honor of Doctor C. C. Miller has been gratifying, there is still need for funds, and the committee would ask that beekeepers who desire to join in this movement shall send in their contribution as soon as practicable. There is no fixed sum to be raised, but it is evident that the larger the fund the better the support of the library will be. We ought to have at least twice as much as has been received, if the library is to be worthy of beekeeping and of the great beekeeper which it is to honor. There is no fixed time for the closing of the subscription, but it should be raised as quickly as convenient.

We believe that there are a number of beekeepers who will wish to increase their subscriptions, now that the purpose of the fund can be definitely stated. We would candidly like to have a number of beekeepers subscribe amounts up to $25, so that the fund will increase more rapidly than is possible with small contributions. Many beekeepers have profited many times this amount because of the work of Doctor Miller, and such a subscription will be but the payment of a long-standing debt.

The committee fully realizes that with the present prices of honey, large subscriptions cannot be made as easily as they could have been a couple of years ago. We believe, however, that for a cause such as this a considerable sacrifice may be made and that none of us could be satisfied by giving a minimum amount. All this is said without any criticism of those who have contributed and with hearty thanks for the support which has been given to this project which we all have much at heart.

Committee.

SIXTH INTERNATIONAL MEETING OF BEEKEEPERS

An international congress of beekeepers has been called to meet at Marseille, France, September 18-21, 1922, in the meeting hall of the Grand Palace of the Colonial Exposition, during a special exhibition of apiculture which is to last from the 16th to the 24th of September. The above mentioned Colonial Exposition will occupy 36 hectares (nearly 90 acres). The last Colonial Exposition in France took place in 1906. The apiarists in charge of the Beekeepers' Congress are N. P. Kunen and E. Sevalle, Vice Presidents of the Permanent Committee of International Apiarian Congresses, and Leon Tombu, Secretary of the same. The call for this Congress is signed by them. The Apicultural Association of Bouches-Du-Rhone publishes a special call for the beekeepers of the world to send delegates.

The President of the organizing committee is Mr. Paul Sirvent, and the Secretary General of the special exhibition of beekeeping is Mr. P. Chiris, both with headquarters at 7 Rue Buffon, Marseille, France. The Secretary of Publicity is Mr. P. Prieur, Place Ste-Croix, Poitiers, Vienne, France.

The membership for national, state, or local associations is 50 francs, personal membership 10 francs, payable to L. Tombu, 26 Rue D'Angleterre, Huy, Belgium.

The principal subjects now on the program are:

1. Selections of bees; queen-rearing stations.
2. Fighting diseases; creation of information and experiment centers.
3. Legislation against honey adulteration in different countries.
4. Speedy transportation of queens and bees and custom house regulations.
5. Practical teaching of beekeeping; discussion of yields; use of sugar for feeding, etc.
6. Comparison of the prices of honey and beeswax in different countries; protective tariffs.
7. Colonial beekeeping.
8. Appointment of delegates to meet every year in some designated city.
9. Appointment of an international bureau, to decide upon the location and date of the next Congress.

We will answer enquiries to the best of our ability.

IMPORTS AND EXPORTS

The United States statement of imports and exports in the honey line, shows 1,953,312 pounds imported and 1,880,511 pounds exported, during 1921, a difference of 72,801 pounds, or about the crop of a large producer. That is hardly a condition for us to be worried over. Of course, every country, ours included, would like to export more and import less. They all play at the same game. Considering the fact that we are, by far, the wealthiest country, we have little to complain of.

A consideration of these figures makes one wonder whether a tariff on honey will make as much difference as some would have us believe.

IS NATURAL SWARMING DESIRABLE?

This question would be answered differently by different people. Many of our go-as-you-please beekeepers expect swarms and are disappointed if the swarms do not come. Yet they are very likely to lose some of them. But the practical, active, American beekeeper does not want natural swarms. He wants the bees under his control, just as much as the other live stock of the farm. When he makes increase, he wants the queens reared from his best honey-producing colonies, and does not propose to leave it to chance.

In Europe, it seems to be different. Many so-called practical men think the bees have lost their usefulness when you succeed in preventing swarming. Many "skep" beekeepers think swarming the only proper way of getting surplus; by hiving the swarms, then "robbing" the richest colonies in the fall, to return to the original number. Which is the better method? It seems to me that the answer is in favor of colony control.

LARVAL FOOD AND DRONE REARING

Larval food, or royal jelly, is that which is fed plentifully to the queen larva during its entire existence as a worm, and to the worker and drone larvæ during the first few days of their life. C. W. Aeppler reports some experiments, in Gleanings, and states that drones secure about 5.5 times as much of this food as worker larvæ. This is another argument in favor of the strenuous fight that our editor is making against the rearing of unnecessary drones. Sooner or later the practical beekeeper will realize that it is as important for him to avoid the rearing of unnecessary drones as to avoid the keeping of an extra number of roosters, or bulls, or stallions.

The month of April, in the Middle States, is the very best time of the year for the beekeeper to examine his colonies and remove all undesirable drone comb, replacing it carefully with worker combs, for if the drone comb is only cut out and the space it occupies left empty, the bees will again build drone comb, for the same reason which prompted them to build it in the first place. Remember that you cannot entirely do away with the drones, but that a hundred or two of them are not of any importance. It is the rearing of thousands of undesirable drones that we must avoid.

Some European bee writers, who might know better if they used a little more reasoning and a little less acquired prejudice, affirm that large numbers of drones are beneficial to the colony. Yes, just about as beneficial as 20 roosters might be to a flock of 20 hens. It is said that they keep the brood warm. Then why do the bees begin to drive them away as soon as unfavorable weather comes?

Rear drones in two or three of your best colonies, as breeders, but do away with them in all other hives, as much as possible.

HONEY GATHERED FROM SECOND CROP RED CLOVER

In the Monthly Bulletin of the French Beekeepers' Societies, published under five or six different headings, for several different organizations, we find the report of a very nice crop of honey gathered from "second crop red clover." The writer, Mr. Manon, comes to the same conclusions as we have reached in this country, that the drought makes the corollas of the clover shorter and enables the bees to gather honey in it. He also speaks of the American "red clover bee," but we must acknowledge that this long-desired race is still in expectation, the occasional examples of longer tongue not having become fixed traits, as yet. It would be useless to deceive our European friends on this score. The same beekeeper reports that he believes the Caucasian bee to be even ahead of the Italians in this respect.

HONOR FROM APIS CLUB

The editors of the American Bee Journal wish to give hearty thanks to the Apis Club of England for electing them Vice Presidents. The Apis Club is doing wonderful work in publishing one of the best, if not the very best bee magazine, and it is quite an honor to be recognized by these men.

THE CONSTELLATION APIS

The "Gazette Apicole," of France, devoted its December, 1921, number to a splendid group of appreciations of the honeybee by some of the leading celebrities of France. An article by the noted astronomer, Flammarion, calls attention to the fact that there is a small group of stars, or asterism, called Apis, the Latin name for honeybee. "Unfortunately," he writes, "one must go very far to see this constellation, for it is situated below the well-known Southern Cross, which shines over the desolate and icy regions of the Antarctic Circle. The eyes of Americus Vespucius, and of his companions and emulators, has seen these stars, and it was after the descriptions of these great navigators of the 16th century that the Celestial Bee was named.

"This bee constellation was shining in the southern sky for our ancestors of 13,000 years ago, and, owing to the secular transformations of the heavens due to the Precession of the Equinoxes, this immense sidereal revolution which requires 25,765 years, our descendants will see it again in another 13,000 years; that is to say, in the 150th century. What sort of civilization will exist then? Let us hope that there may still be some flowers for the bees and some honey for the good of mankind."

ASSOCIATIONS AND ORGANIZATIONS

Of every 100 beekeepers who applaud the benefits of organized production and marketing there is only a small pr cent who actually join with an association and help carry on. It is as A. G. Ames says: "Too many of us stay on the outside and wait until the fellows on the inside make a success before we get in."

INFORM THE PUBLIC

When a beekeeper is called upon to speak in public about bees, it is well for him to mention especially the wrong impressions which are entertained by the masses, on bees and honey. We can do more good to the business of beekeeping in that way than in any other way. There are a dozen subjects upon which the public is misinformed. Some of these are injurious to the industry. Here are a few of the most flagrant:

Many persons believe that bees injure blossoms and take away their substance, thus stunting them.

Many are not aware of the fact that bees and many other insects are indispensable in the fertilization of fruit.

Many believe that the nice sections of comb honey offered on the market are made of paraffine filled with glucose and sealed by machinery, a remnant of the Wiley hoax of 1880.

Many think that a bee will sting as readily away from home, without being attacked, as they will sting the little boy who pokes a stick in their entrance.

Many think that wax is harvested on the flowers and carried in on the legs of the bees.

Many believe that granulated honey is "just sugar" and that the producer of it is a swindler, while they readily buy liquid glucose for good honey.

Many believe that the bee moth destroys entire apiaries if it is not trapped and caught.

The most important of the above errors are those that have to do with the production and sale of honey. Fight them, at every opportunity. You are the ones to do it.

THE HONEY REGIONS OF FLORIDA

Items of Interest About the State where Winter is but Little Known

Photos by Florida Photo Concern.

By E. G. Baldwin

HONEY is honey, and flowers are flowers to the untutored. Such folks are apt to suppose that violets, pinks, pansies and all the hosts of garden flowers must be a very El Dorado for bees and beekeepers. A city friend of mine once said to me: "Oh! I **must** get a hive of bees and put it in my back yard, for all my neighbors in this block have flower beds."

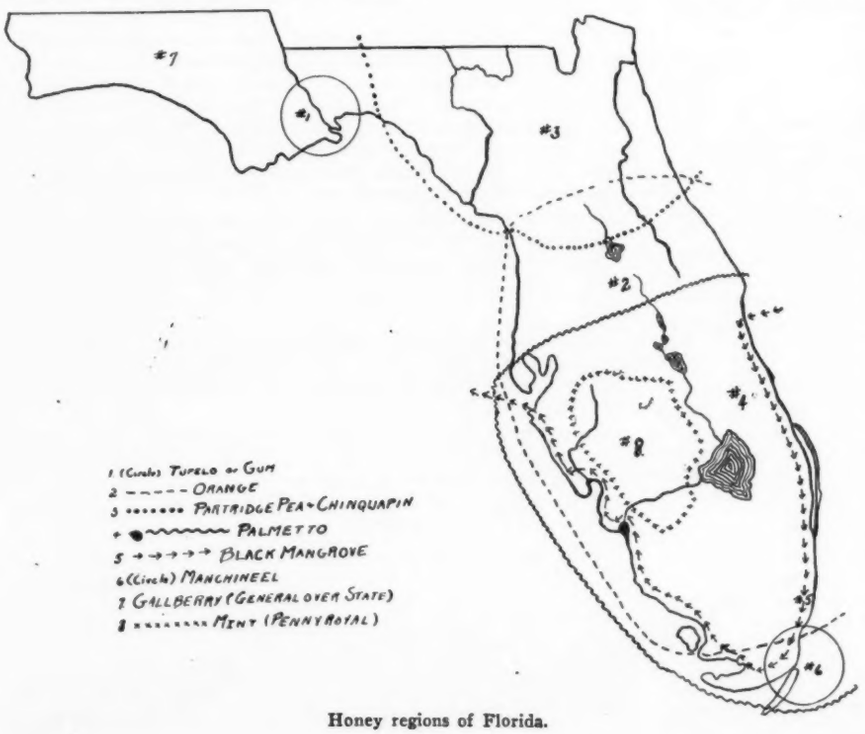
But, as a matter of fact well known to beekeepers, at least, practically all nectar comes from what might be called honey plants, and not from flowers proper. For very few garden flowers yield nectar, and relatively few blossoms of any kind yield nectar in quantities valuable commercially.

Geographically, the entire United States can be mapped out according to the real honey-producing plants; such an outline has been made in a comprehensive way. The general regions have been more or less studied and are recognized today as such. Our national apiarist, Dr. Phillips, blazed the trail through scientific study of regional differences in nectar secretion, thus eliminating much of the vagueness of the loosely-used term "locality." Beekeeping in any section of the country is inseparably linked with the honey-producing plants of that region. Therefore the honey sources of any State, or States, are a primary study in any understanding of beekeeping conditions there. What our beekeeping literature needs nowadays is an intensive study of honey plants in the smaller areas from Canada to the Gulf and from ocean to ocean. Such smaller areas of special honey flows may well and very properly be called localities, but from the misuse, or abuse, of the latter term, the name sub-region is probably better, meaning a subdivision of the more general regions.

Texas excepted, very little intensive study of nectar secretion has heretofore been attempted for the smaller areas or "pockets" of the general regions. Of course no final word can be spoken, so long as the factors influencing nectar secretion are known only in part. Every contribution, however, adds something to the possibility that these factors may eventually be understood and known.

Already it can be predicted that a system of best beekeeping practice has been worked out in the main for the region of the clovers. But for the alfalfa region, the southeastern region, the semi-arid region of the Southwest, and for the sage region very little systematizing of methods has thus far been made public, and hardly any standardizing of beekeeping practices, for the regions named.

Florida grape fruit and orange grove.



Honey regions of Florida.

Florida a Composite Region

The semi-tropical part of the United States, that peninsula that juts out at the southeast corner of our land, into the gulf stream, and known as Florida, or the "Land of Flowers," lies geographically within the general division known as "The Southeast Region"; but so diverse are its nectar sources and so limited some of the special areas that Peninsular Florida, at least, might properly be treated as a group of "Restricted Areas." The extreme north edge of the State, including so-called "West Florida (from Pensacola westward almost to Mobile, Ala.), possesses, to be sure, much more nearly the characteristics of the larger southeast region as a whole. Of this southeast region Dr. Phillips ("Beekeeping," page 211) says: "The various rather distinct sub-divisions of this territory might well be placed among the restricted honey regions, except that certain things in common in the honey flows

Saw Palmetto in the Florida pine woods.

make the same type of manipulations necessary."

Though the above was written of the southeast region as a whole, a truer characterization of Florida could not be made. To illustrate: In north and "west" Florida the tupelo, gallberry, partridge pea and chinquapin closely identify those sections of the State with the same, or nearly similar, flows in southern Georgia, Alabama, and even in South Carolina, and make the same "type of manipulations" advisable. Any differences in best beekeeping practices in the sections named would be due to the amount, rather than the kind, of honey flows. Doubtless in course of time a system of practices best suited to the southeast region as a whole will be worked out and proved by tests comprehensive enough to be accepted as standard for the region, just as has been done for the clover region.

But in central and southern Florida (south of a line drawn, in imagination, east from Pensacola to St. Augustine) there are no fewer than five distinct sources of nectar of commercial importance, viz., saw and cabbage palmetto, orange, black mangrove, mint and manchineel. In these five sources are included all but four of the nine nectar sources of commercial significance. Gallberry is the one and sole source that may be said to belong to the state as a whole, the one honey plant that alone identifies Florida with the entire southeastern region's general characteristics.

North Florida Conditions

Therefore, for northern Florida, a system of best beekeeping practices, whenever worked out and standardized, will be found to coincide pretty closely with that of the larger region named; but the five nectar sources of central and southern Florida are either so widely divergent in soil conditions and time or nature of honey flows, or so limited in area, as to make a comprehensive system of beekeeping practices for all the local areas of their blossoming impossible, save in the largest and widest points of identification. A glance at the map may serve to make clear the reason. Take the citrus group, for example. Oranges yield honey in commercially important quantities, in average years, as far north as Palatka, on St. Johns River, and as far south as the Keys. It is the earliest honey flow for surplus in the section named, coming in February and March. Pennyroyal, on the other hand, in the same area, is limited to the southeastern portion of it (i. e., south of Tampa and half way eastward across the State.)

Pennyroyal begins blooming in November and December, blossoms through December and January, usually, and is largely a winter bloomer, therefore. Within the pennyroyal area, therefore, the plant makes an excellent forerunner for the orange honey flow, for it finds the hives light in bees and honey the fall before and leaves them "booming" with both in the spring, all primed and set for the orange, even with no special "spring management" on the part of the beekeeper. But (again refer to map) in the area between the northern limits of the two (orange and pennyroyal) a distance of perhaps 150 miles, there is very little for the bees to gather, on warm days of late winter (January or early February), in fact, nothing from Octob r to February, i. e., between the last blossoms of goldenrod and throughout the fall before, to orange blossoms the next spring. For in the space between areas there is no pennyroyal to fill the gap. And that makes all the difference in the world. In that area, therefore, it is a real beeman's problem to get the colonies, on an average, up to maximum strength, even to optimum colony strength for orange honey getting. I know, for I have tried it. It is harder to get rousing colonies there by February 15, than it is in the clover region by June 1. On the other hand, where orange and pennyroyal overlap, the conditions are sub-tropical; north of the pennyroyal area there is a pronounced "broodless period," and a real "springing" problem where the beekeeping practices of the clover belt will secure better results than will those that are practicable further south, or, for that matter, further north in the southeast region proper.

The Swarming Season

Here is another illustration of the point under discussion: It is a well-attested fact that swarming is more intense in the first real honey flow of the year, in any part of any country. In the clover region, it is, therefore, most intense in clover bloom; similarly, in peninsular Florida, swarming is usually worst during orange blossoming time. So intense becomes the swarming "urge" then that the air is vibrant with the hum of swarming or absconding colonies, and the most rigid methods of swarm control are required to secure maximum working numbers in the colonies among the fragrant orange blossoms. In short, in the area where orange is the first big flow, the manipulations of the clover belt are very effective in swarm control during the orange blossom time; such as young queens in fall, protection of hives in early spring

Cocoanut grove in extreme southern Florida.

breeding, abundance of stores and big hives, doubling up before flow, tiering up in flow, plenty of ventilation and shade during heated portion of the day, "putting up" of brood or removal of queen as the swarming tendency increases, etc. In the orange belt the next big flow is from saw palmetto, but with an interval of about three weeks. To secure best results from palmetto it is necessary to be near the coast or some important river or water courses, and as a consequence some beemen move their bees from orange groves to palmetto areas, after oranges are done blooming. It is a notable and suggestive fact that those colonies that have thus gone through one (orange) swarming time, do not swarm very much from palmetto bloom, even though the weather is then hotter and the colonies, if anything, more populous. In fact, such "migrated" outyards need almost no watching for swarms, if ample room is provided, by a double brood chamber and two to three supers per colony, during the palmetto flow. A condition similar to the above is found here in northeastern Ohio during our buckwheat flow that follows our clover; and the same truth is apparent and works out in actual practice, for here we can run our colonies for comb honey during buckwheat and be troubled less with swarms on an average, than with those colonies run for extracted honey during clover flows. This is, of course, meant on an average; certain years conditions are slightly varied, but it is true in the main.

Florida Peculiarities

It is easy to see how a type of manipulation admirably adapted to secure good results from orange honey flow is not necessary, or even always advisable, in other restricted regions of Florida. More than once I have gone north in early June and left my outyards in charge of an overseer, who often had less than 5 per cent of swarms, even with no special efforts at swarm control. On the other hand, let orange blossoms fail utterly, as they do in cases of extreme frosty weather, or after a severe freeze, and all through that belt, if there be a generous supply of palmetto, swarming will be intense during the palmetto flow. I recall one such occurrence in 1908. That year orange honey was a total failure, and along the southwest coasts palmetto yielded very copiously and suddenly. As a result, swarming, on palmetto bloom, was a wonderful (?) experience. One beeman near Osprey, Fla., after an absence of but ten days from a certain outyard, found on going to it that every one of his 50 colonies had swarmed and absconded. The point is this: the beekeeper in the restricted orange region cannot "get by" with the same methods of manipulation and practices that will ordinarily hold for regions whose flows are from other limited sources, or whose flows occur at different seasons, or in different sequence, or amounts, etc. Probably enough has here been written to show that peninsular Florida is extremely composite in its regions—markedly different from the northern portions of the state—and that the various overlapping sources of nectar make careful regional analysis imperative to best results there; and, finally, that no one system of beekeeping practices can be laid down as applicable to the entire peninsula. Migratory beekeeping, especially, demands a careful study of limited nectar sources and local honey flows in the various sub-regions.

Blossom of the cocoanut.

As a basis for further study and comparisons, we here repeat, in tabulated form, the commercial honey sources, with a list also of their scientific names, for complete and exact identification; for we have always found local names of plants very unsound and extremely misleading.

There are two members of the mint family that produce honey in Florida —the pennyroyal proper (see list of scientific names) and the purple-flowered mint; the former is a winter bloomer, the latter blooms in spring and summer and early fall. The pennyroyal blooms mostly in the southwestern portion, and the purple-flowered mint blooms considerably further north, as well as over the southern area. The honey from the pennyroyal is almost white, that from the purple-flowered mint is medium amber. Locally, the two are often confused by beemen. Moreover, it is easy to get the honey from pennyroyal separate from other sources, hence in its purity; but that from the purple-flowered mint is usually blended with other, contemporaneously blossoming sources. The current expression that "wild pennyroyal is found in southern half of state," includes, apparently both the mints in one general expression.

List of Main Honey Sources

1. Tupelo or gum **(Nyssa)** four species, viz.: **(sylvatica, biflora, aquatica** and **Ogeche)**, northwest Florida only. March and April.

2. Orange, including grapefruit, etc. **(Citrus aurantium, decumana, etc.)**. February and March—general; best in southern half of state.

3. Partridge pea **(Cassia chamaechrista)**; general over northern half. July and August.

4. Chinquapin **(Castanea pumila)**; north Florida; May. Honey dark and

strong; good for bakers.

5. Palmetto, (a) saw or "scrub" **(Sabal megacarpa)**; May-June; southern half of state. (b) cabbage palmetto **(Palmetto Sabal)**; July; southern half.

6. Black mangrove **(Avicennia nitida)**; coastal only. Daytona on east coast around south point of peninsula and up to Tampa on west coast. July. Best on east coast and on northern limits of its growth.

7. Gallberry **(Ilex glabra)**. General over state; best on east coast and north of center. May.

8. Manchineel **(Hippomane mancinella)**. Beaches and coastal stretches of southeast Florida and Keys adjacent; very limited in area. Early spring.

9. Mint. (a) Pennyroyal **(Satureja rigida)**; southern third of state; best in southwest portion. November and December to March. Fine honey; light color. (b) Purple-flowered mint **(Mesophaerum spicatum)**; southern two-thirds of state; from March to November; honey medium amber.

Ohio.

FACTORS AFFECTING NECTAR SECRETION IN FLOWERS

By John Davidson, F. L. S., F. B. S. E.
Department of Botany,
University of British Columbia.

IN parts of British Columbia they have had a phenomenally poor honey harvest the past year, and the beekeepers are exercised to find an explanation for the greatly diminished flow of nectar during what was anticipated would be a good year for the honey producing industry in this Province. It might be well to discuss the factors affecting nectar secretion in flowers, in the hope that such a discussion may help to forecast good or bad honey seasons with some degree of accuracy.

To a botanist familiar with physiological and ecological botany the **cause** may be found by a study of the **effects;** but for the benefit of those not versed in those branches of botany, it may be well to briefly review some fundamental facts which all beekeepers should know and keep in mind.

All Our Valuable Native Bee Flowers Are Perennials

Practically all our useful native bee flowers lay past a food store for use the following spring or early summer. Just as soon as the flowers are past, the plants commence storing food in the stems and branches of woody species, or in the underground stems or roots of herbaceous species. Therefore anything which hinders the healthy growth of such plants, after they have flowered, diminishes the supply of food stored for next year.

Plants Do Not Find Their Food in the Soil

This is contrary to the popular belief held by many people; some gardeners and agriculturists cling religiously to this old fallacy. All food used by the plant is first manufactured in the leaves, part of the raw material comes from the soil, part comes from the air; but this cannot be used as food until it has been manufactured in the laboratories—the leaves.

Consequently, as the raw material in the soil must first be dissolved in water and absorbed in solution by the roots, a scarcity of soil water after the flowering period will seriously affect next year's food store, because it usually results in the shedding of many leaves, the importance of which has been emphasized.

The Food Store in Winter

The manufactured food is usually stored in an insoluble condition over winter; in this condition it is less liable to injury by frost. Heavy snow serves as an added protection against severe frosts.

The Food Store in Spring

The plant is aroused from its winter sleep when the soil is warm enough for the roots to absorb water to enable the protoplasm to re-dissolve the stored food. The sap in the plant at this season becomes highly concentrated and causes what is known as osmotic pressure throughout the plant. This pressure aids in forcing open the hundreds of buds on shrubs and trees, and enables the young shoots of perennials to push up above the soil in spring. One of the functions of the leaves is to maintain this osmotic pressure until the flowering period. Therefore, the greater the size and number of leaves on the plant, the greater is the amount of prepared food and the greater is the osmotic pressure when the flowers are fully developed.

Danger of an Early Spring

If the spring should be an early one, young shoots are liable to be killed by late spring frosts and the food used in forming such shoots will be wasted; the plant, therefore, has to form new shoots from its reduced food reserve. **This is one of the factors** which played a part in the diminished nectar flow during the past season. We had practically no snow to protect the plants from the early spring sunshine, the soil warmed up sufficiently to arouse the plants from their dormant condition, and late frosts killed the young shoots.

Another Factor

In addition to our spring frosts last year we had an exceptionally cold and wet spell in the months of March and April which hindered the development of the new leaves, so that instead of being able to assist in manufacturing food at that time, they had to depend to a larger extent on what remained of the previous year's food resere. Thus in some areas where fireweed **(Epilobium angustifolium)**—one of our most valuable nectar-yielding plants—was abundant last year, it died out, or appeared in greatly reduced numbers while, in other areas where it survived, the plants were not so vigorous and floriferous.

The long cold spring retarded the melting of the snow on higher altitudes, and the sudden change to warm weather caused it to melt so rapidly that most of the water was lost as it ran off in freshets, resulting in devastating floods in the lowlands. A mild spring would have permitted the gradual disappearance of the snow and its absorption by the soil, resulting in the gradual liberation of water throughout the summer, and supplying large areas which last year were very dry. Conditions favorable to the growth of fireweed would be equally favorable to the growth of most other native bee plants.

Scarcity of Soil Moisture During Flowering Period

Add, to an early spring followed by an exceptionally cold spell, the usually dry summer during the flowering season of the fireweed, and it becomes a marvel that the plants were able to reach flowering stage. Fortunately for some beekeepers, the plants were established on slopes which had sufficient soil moisture as seepage from higher ground, thus removing one factor which operated against beekeepers in less favored situations.

Thus it will be found that an abundant snowfall in winter, followed by a mild spring, is likely to result in a good supply of soil moisture in May and June (and in some districts July and August, through seepage from snow on higher altitudes), and we can safely predict a good honey season. The same is true if there is a light snowfall in winter and frequent warm rains in May.

Having considered the causes of the diminished flow of nectar during last season, it may help in future to reason out the **cause** from the **effect** if I present a few fundamentals of nectar secretion by flowers.

If the cell sap throughout the plant is of low concentration, the plant forms abundant foliage and few flowers; if the sap is highly concentrated, it induces the formation of an abundance of flowers and fruits.

A superabundance of water in the soil tends to keep the concentration low, and every gardener and orchardist knows that his plants under such conditions produce too much foliage and wood.

A moderate supply of available soil water and a succession of warm, bright days, followed by cool evenings, tends to increase the concentration of the sap, and consequently increases the osmotic pressure in the plant, through an increase in the rate of absorption of soil water.

During the development of the inflorescence and of all the parts in each flower, there is an enormous drain on the plant's resources, thus lowering the pressure. As the flowers mature, this drain diminishes, again raising the pressure. The nectaries (sometimes erroneously called honey glands) act as safety valves and allow the excess of concentrated sap to escape in the form of nectar—

a sugar solution. This pressure in the plant is often so great that the sap is exuded from the tips of the leaves, as is often seen in grasses after a hot day followed by a cold night; or, as has been found in some coniferous trees in this Province, where the sugar crystallized and formed large masses on the foliage.

This pressure within the plant, forces open the flowers and keeps them open and supplied with nectar until, through the agency of insect visitors or otherwise, the transference of pollen causes the ovules to tap the plant's resources and a greater drain on the plant commences. This results in reducing the pressure, the nectar flow ceases, the floral parts fade and wither or fall off, and the plant is taxed to its utmost to supply food for all the rapidly growing seeds.

Gradually, as the seeds mature, the pressure increases again and the surplus food is stored away in leaf buds and flower buds for use next spring. By this time of the year the soil becomes cooler, the roots less active; even though there may be an abundance of water in the soil, it is too cold for the roots to absorb, and this inactivity results in the loss of leaves and the gradual return of the plant to its winter dormant state.

Thus, in somewhat popular language, purged of all technicalities, is presented the season's work of a plant. It will be observed then, that if bee plants in the vicinity of an apiary are cut, burned, eaten by stock or caterpillars, damaged by frost or by any other agent, they will, directly or indirectly, affect the honey harvest.

EVERY STEP WITH AMERICAN FOULBROOD

A Picture Story Showing How to Treat the Disease and Care for the Bees and Equipment

By Frank C. Pellett

WITH American foulbrood, as with most other diseases, "an ounce of prevention is worth a pound of cure." However, in spite of our best care, it cannot always be prevented and it is important that every beekeeper understand the nature of the disease as well as the proper methods of treatment when it does appear.

It is highly important that the disease be recognized in its early stages, but at this time it is confusing to the novice who is seldom able to distinguish it from other brood diseases or from chilled or starved brood. There are cases where the most expert are puzzled to know exactly with what they have to deal. The safest plan is, wherever any suspicious conditions develop, to cut out a sample of the diseased comb and send it to the Bureau of Entomology at Washington, D. C., for examination. This service is free and will enable the beekeeper to determine definitely the kind of treatment necessary for a given case.

Appearance of the Disease

The picture shows a portion of a comb taken from a colony with an advanced case of American foulbrood. The sunken and perforated cappings are typical of the disease, as the larvæ are usually attacked about the time the cells are sealed and most of these cells containing dead larvæ are capped. As the disease progresses, more and more of these perforated cappings will be apparent, since the bees seldom clean out the dead matter and use the cells again.

This disease is often called ropy foulbrood, because of the tendency of the dead matter to rope or string when drawn from the cell. The most common test for American foulbrood is to insert a toothpick into the cells containing dead larvæ and draw it slowly away. If the decaying matter stretches out like thick molasses for an inch or more, it is usually American foulbrood. However, this test is not absolute, as European foulbrood sometimes develops a ropy condition to some extent. Since the treatment for the two diseases is entirely different, it is necessary to make sure which disease is present.

American foulbrood has a very characteristic odor, which is commonly described as a glue-pot smell. Once one becomes familiar with this peculiar odor he will readily recognize it. Queen or drone larvæ seldom die from this disease, while European foulbrood attacks all with equal frequency.

The picture does not tell all the story, for after the dead matter has become fully dry, it forms a brown

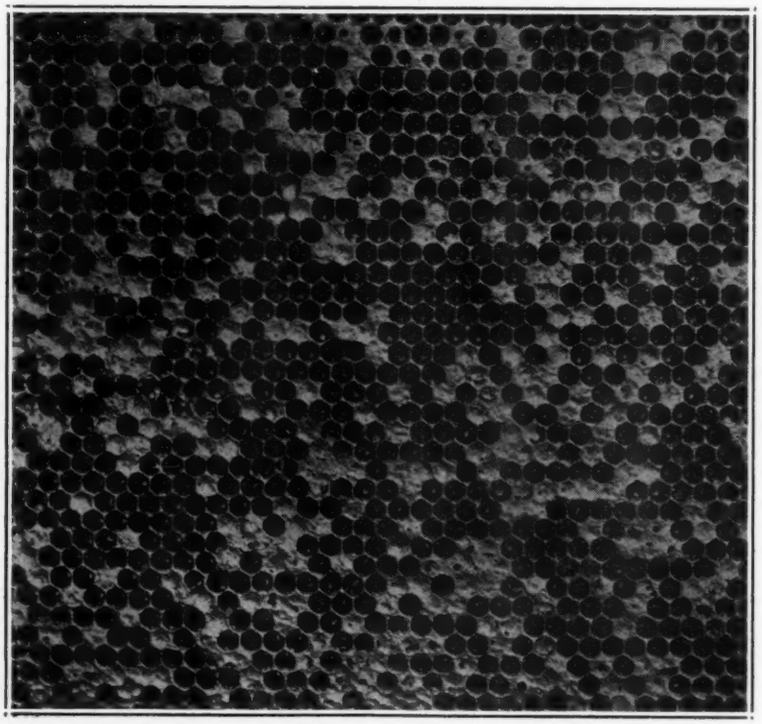


Fig. 1. American foulbrood in advanced stage.

Fig. 5. Bodies of brood piled up to emerge over weak colony, which will later be treated.

Fig. 2. Shaking the bees into clean hive.

scale adhering closely to the lower side of the cell. This scale sticks so well that it is difficult to remove without damaging the cell walls. A close look will disclose evidence of the scales in some of the cells shown in the illustration.

Treatment

When American foulbrood is found to be present, it is necessary to remove the bees to a clean hive where they will be free from all the infected matter. In order to be successful it is important that treatment be given at the proper time. Failure is likely to result unless there is a natural honey flow. Every precaution should be taken to insure that none of the infected honey gets back to the bees after shaking, or the job is very likely to require doing all over again.

Fig. 2 shows the hive prepared to receive the bees. Frames with full sheets of wired foundation are hung in the hive, and a strip of queen excluding zinc is fastened over the entrance to prevent the bees from swarming out. The frames are then carefully lifted from the diseased colony and the bees shaken into the new hive at one side where some frames have been left out till after the shaking is done. It will readily be seen that it is extremely difficult to handle this operation successfully when bees are robbing. If there is a honey flow and the bees are working quietly, there will be little trouble.

As fast as the bees are shaken from their combs those containing brood are placed in an empty hive body, while those without brood are placed in burlap bags beyond the reach of robbers, as shown in Fig. 3. Great care is necessary at every step to avoid exposing the honey and attracting bees from healthy hives. As soon as all the bees have been shaken from a hive it is at once closed.

If the colony treated is a strong one, the clean hive into which the bees have been shaken is placed on the stand on which the colony formerly stood, the remaining space filled with frames of foundation and the cover replaced as shown in Fig. 4. If it is a weakling two or more colonies are shaken into it and the hive placed on the stand previously occupied by the strongest.

If only one or two colonies are to be treated the brood will be lost, as the combs should be melted at once. If there are several colonies to be treated, the hive bodies containing the brood should be stacked up over a weak colony for three weeks to permit all the brood to emerge, as shown in Fig. 5. The entrance should be contracted and all cracks closed to avoid robbing. Since combs without brood are removed at once, there is usually room for brood from three colonies in two hive bodies. The stacked colonies should have their queens removed or caged so that there will be no brood present when these colonies are finally shaken. With the brood emerging in the three or four hive bodies which have been added there will shortly be a very large force of bees, and they will be in the best possible condition for treatment.

Cleaning the Equipment

After the bees have been shaken into clean hives, the next step is to prepare the hives for use again. The big problem is to make sure that all traces of honey are so carefully removed that no bees can ever find it. It is at this point that most failures result. American foulbrood is carried from one colony to another in the honey. While the presence of the disease does not hurt the honey for human consumption, it too often happens that the beekeeper in an effort to save the honey, leaves some within reach of the bees, and thus loses the benefit of all his labor. It is often stored in the honey house for later attention, and once there, remains for an indefinite period, until someone

Fig. 3. Combs without brood are placed in bags beyond the reach of robbers.

leaves the door open, or some other accident occurs.

The only safe plan is to complete the job while you are about it and melt up all combs and dispose of all the honey at once. Some beekeepers even go so far as to bury or burn all the old combs on the spot. The wax is valuable and once melted offers no chance to spread the disease. If the frames are to be used again they should be boiled until all traces of honey and wax are removed. Since frames are cheap, most beekeepers prefer to burn them and buy new ones. Covers, bottoms and bodies should be very carefully cleaned. Fig. 6 shows how they may be scorched with a painter's torch. Care should be used not to char the wood, as all that is necessary is to remove all traces of honey and wax. The source of greatest danger is that a smear of honey be left behind the metal rabbets, where it will not be reached by the torch.

The Hospital Yard

Since it is so easy to spread the disease when treatment is in progress, many commercial honey producers establish hospital yards. Whenever a colony shows disease it is at once removed to the hospital yard, so that all the diseased bees are together and away from the healthy ones. The beekeeper who operates several hundred colonies in a neighborhood where disease is present will frequently find new cases, and by moving these to an isolated location as far as possible from other bees, danger of spreading is greatly reduced.

An Austrian Bee School

"Bienen Vater," the Austrian bee journal, announces an Austrian bee school for 1922. In all eight courses will be offered, covering both beginning and advanced work in theory and science, special subjects like queen rearing, and courses for those who expect to specialize in teaching beekeeping.

SPRAYING IN RELATION TO BEEKEEPING

A Repellant Which Saves the Bees From Poisoning

By Miss Josephine Morse

Early every summer the bee journals are sure to have depressing letters from beekeepers whose bees have been poisoned by spraying. The spraying may have been done by fruit growers for the benefit of their trees, or by the City Forester or Tree Warden to preserve the roadside trees from the attacks of insect pests. I have before me on my desk a letter from the Bee Specialist of the State College of Washington, who says "the beekeepers of the Yakima Valley alone lost $38,000 this year from poisoning by spray. Several have gone into other lines of business." Whatever the case may be, it is a well-known and deplorable fact that hundreds and thousands of bees every year in every part of the country are killed by eating arsenate of lead spray, which they may get either in the fruit blossoms with the nectar (if trees are sprayed when in bloom), from pollen, or from the dew on sprayed foliage. Many think the sweetness of lead alone is attractive to bees (this is testified to by house painters) so that when no considerable amount of nectar is coming in to the hives, the bees "work" foliage or grass, or anything freshly sprayed with arsenate of lead. Probably fully as much damage results from sprayed foliage as from poisoned nectaries or pollen. Therefore the relief of the situation would seem to indicate the use of something in the spray which would be repellant to bees.

Fig. 4. Treated colony with queen excluding zinc over entrance to prevent absconding.

Fig. 6. Scorching hive bodies with painter's torch.

I was strongly induced to investigate this matter after an experience with poisoning in my own apiary in which, though no colonies were entirely lost, the colony strength was reduced to one-third the normal condition; that is, about two-thirds of the bees died from the effects of poisoning. This happened in the latter part of June, when an adjoining apple orchard was given an additional spraying to control the small gypsy moth caterpillars which were swarming out from nearby woods and not only eating the leaves, but also attacking the young apples themselves. At this time there was nothing in bloom but a scattering growth of alsike clover, which, from either weather or soil conditions—perhaps both—was yielding very little nectar. So the bees were attracted to the fresh spray and

sucked it from the leave sand grass. They were able to get home, but there dropped down on the ground by their alighting boards and crawled about through the grass, trying to lift themselves on their wings, and finally dying in great distress. At the end of the day the ground in front of the hives was covered with great piles of the dead and dying. In this case poison had unmistakably been gathered from sprayed foliage.

After much correspondence on the subject and receipt of many reports of difficulty and loss in keeping bees —particularly in the apple-growing regions of the northwest—I was finally fortunate in hearing of a repellant which is used in the spray with splendid results by the city of Newton, Mass. Before this repellant was used, there were many complaints from the beekeepers of bees being poisoned after the city trees were sprayed. Mr. F. R. S. Gourley, a prominent beekeeper of Waban, a part of Newton, made investigations, and after consultations with scientific friends recommended that a repellant called "Milkol" should be used, in the proportion of one pint of milkol to 100 gallons of regular arsenate of lead spray. Milkol is a common disinfectant, similar to sulphonapthol, but cheaper—usually sold by dealers in agricultural supplies for use in cow barns and hen houses. Something else might be as effective, but this has been thoroughly worked out and proven. Since using this repellant bees have been kept successfully without trouble from poisoning, though the entire city of Newton is sprayed every year. It is used in our own orchards and in our neighbors' with equally satisfactory results.

So the conclusion is drawn that, where bees are kept and spraying is practiced it will cost little and perhaps save a great deal if something is added to the spray which will have no undesirable chemical reaction to interfere with its efficiency, but which will repel honeybees.

Massachusetts.

THE BIG HIVE FOR COMB HONEY

Reasons Why the Big Hive Can be Made to Serve the Comb-Honey Man With Less Manipulation Than the Small Hive

By E. M. Cole

The idea of the modified Dadant hive as a comb-honey hive runs in my mind to such an extent that I will have to relieve the pressure a little before I can pin my mind down to the ordinary affairs of life.

That this hive is built on the soundest principles as an extracted honey hive you must already believe.

That in whatever hive a colony of bees can be prepared and brought up to the opening of the extracted honey harvest, must also, up to that point, be the best comb-honey hive, I believe you will admit.

The capacity of the modified Dadant hive is such as to allow the colony to come up to the opening of the harvest in the best possible condition for storing a crop, and rarely permit enough pressure to be developed in the brood chamber to cause swarming.

From this point on it is a question in comb-honey production, of keeping the broodnest relieved of this pressuse.

If the honey is stored from the very first above the brood chamber, I believe the queen will rarely so crowd the hive as to bring on swarming conditions, but will provide the brood to keep up a constant flow of bees and this constant flow is the only way to provide a constant supply of bees for all divisions of labor in the hive, the main point being a due proportion of wax producers and comb builders to provide storage room for the honey crop.

That the Modified Dadant hive will provide this is, I believe, argued from the fact that Doolittle, with a small brood chamber (and most of the time, at least, with the Gallup hive), produced an average of nearly 100 pounds of comb honey per colony for 15 consecutive years, and Dr. Miller's large comb-honey crops, one of an average of 266 sections per colony.

This shows how rapidly comb for storage can be produced, even under small hive conditions.

The divisions of labor in the hive are probably pretty well defined in a state of nature, and bees work with most efficiency and content when this condition is present, still this division is likely flexible enough to allow nurse bees to serve a little longer as such, or move along to comb building a little sooner, to continue longer as comb builders or become fielders a little earlier in life, as daily conditions of harvest necessitate, without any interference with colony efficiency.

This natural flexibility in the division of labor, together with the fact that field bees involuntarily secrete more or less wax, depending on the amount of nectar gathered or manipulated, will, I believe, provide the material to build storage room for all the honey the colony will produce.

This condition must rarely be present in colonies restricted to the brood capacity of the small hive, workers being forced backward or forward into different divisions of labor, after or before they are best fitted for that particular division, or else production interfered with until conditions in the colony somewhat readjust themselves.

The cause of this unbalanced condition dates back weeks before, to the time when the brood chamber became crowded and brood could be supplied by the queen only at uncertain intervals as bees emerged or additional combs were supplied by the beekeeper, a condition which could never be entirely remedied later by any possible manipulation.

That some remarkable comb-honey crops have been secured under such a handicap, indicates what can be done with a hive that automatically provides the very best colony conditions for comb-honey production.

To produce comb honey under our local conditions the Modified Dadant hive needs its two outside combs of honey as a reserve supply to be drawn on both before and after our light tree honey flow and up until the opening of the dandelion flow. These combs would be needed, and also a shallow extracting super to care for the heavy dandelion flow we usually have, and this provides a very necessary reserve supply to draw on for brood rearing during the ten, and often more, days between the dandelion and opening of the clover flow.

Just before the opening of the clover flow it might be best to remove the two outside combs and insert dummies, and if the shallow extracting super is used as a "coaxer," and 10-frame comb honey supers, the first one well supplied with "bait" sections with full sheets of foundation, the supers as well manipulated as they would be with a smaller hive, and no excluders used to hinder upward storing, I believe a colony in the Modified Dadant hive will go right along through the harvest with but little, if any, more inclination to swarm than if run for extracted honey.

If, at the opening of the honey harvest, when running for comb honey, the two outside combs in the brood chamber are removed and dummies substituted which allow a half inch space next to the hive wall (a space which Dr. Miller says bees will never fill with comb under such conditions), it will prove a great protection from the hot summer sun, provide extra air space and means of ventilation, and an easier way for field bees to reach the supers than through the crowded broodnest.

The objection has been urged against wide spacing that it prevented a colony building up quite as fast in the spring as narrow spacing, as it required more bees between the combs to keep up the necessary heat for brood rearing, which is true; but this wide spacing is a distinct advantage when the problem is viewed as a whole.

It helps to prevent the brood chamber becoming crowded early in the season, which would require a full super above to relieve, and this much extra space above, with its upward draft, might, so early in the season, be more detrimental than the wider spacing below.

At the same time the wide spacing automatically provides for the necessary ventilation in summer and more stores above the cluster for winter.

Never until I had read in some of Fabre's writings how impossible it is for an insect to retrace its steps after its instinct has reacted to any condition of its environment, did I realize how necessary it is to prevent the

condition in the hive which causes swarming **before** the instinct of the bees has reacted.

Audubon, Iowa.

(Dr. C. C. Miller, in producing those great crops of comb honey, used two-eight-frame hives for breeding, removing one of them with the poorest combs of brood, just at the beginning of the honey flow. The combs thus removed were given to weaker colonies or to divisions. The hives of powerful strength, thus reduced, at once invaded the supers, and it required several supers to store the immense crops. The noted producers of the East, in bygone days—Quinby, Capt. Hetherington, Elwood, and others—used large brood chambers, similarly reduced to the actual brood space at the opening of the honey crop. So your suggestions are certainly in right line with successful honey production.—Editor.)

INCREASE YOUR AVERAGE PRODUCTION

By Majors Nordan

The beekeepers have made many improvements and accomplished much towards improving the industry during the past few years. The percentage of swarms has been lowered; a hive has been made to meet everyone's need; we have a cure for practically all diseases, a method for wintering in every climate; the demand for our product is increasing, and numerous other improvements. But after reading the average production per colony for the year 1919-20 in the various states, as figured by Mr. Reynders in the January issue of the American Bee Journal, it seems that we have not accomplished what we should. Over one-half of the 48 states produced less than 15 pounds per colony. This indicates that something is wrong, for if we cared for our bees as we should they would pass this mark on most any range.

The foremost cause of this low production is the large number of crude beekeepers all over the country, and it seems there is no way of changing them. They will not read a bee journal; you cannot persuade them to spend any money for fixtures; so it seems that the only way of converting them is by strict laws and personal attention through our beekeeping associations.

Then comes another class which is not much farther advanced in production but use modern equipment. They are the ones that begin beekeeping with the idea of getting rich quickly, with a small investment, and no labor. They have been misled by the saying "Bees work for you and board themselves," which is true but misleading, for while bees are always at work they are not always storing surplus. It takes a great deal of work, by the beekeeper, of the right kind and at exactly right time, to obtain a large surplus. The beekeepers of this class soon see their mistake and either sell out or go at it in the right way. We should try to keep beginners from supporting this idea, but make it plain to them that it takes hard work to make a success of beekeeping as well as any other occupation.

The next class includes the professional beekeeper or the extensive honey producer, the one that should produce a large amount of surplus per hive but often does not exceed the former class very much. It is not for the want of knowing how altogether, either, but pure carelessness, as no beekeeper is lazy.

One mistake made by many beekeepers is spending too much time and thought with some of the minor subjects and not enough with the ones of most importance. A great deal has been said about the size of the hive to use. This should be a matter of preference, and the subject of importance should be to keep plenty of empty cells for the queen at all times. If the beekeeper prefers the extra work of manipulating two 8 or 10-frame brood chambers to do this, all right. No matter which you are producing, comb or extracted honey, a large force of bees is the main requisite, and can only be obtained by giving the queen plenty of good empty combs and ample stores.

Another subject of great importance to which not enough attention is given, is the queen. More depends on her than any other one thing, as to the amount of surplus a hive produces. No matter what size hive you use, if the queen is sorry, you receive no surplus. An 8-frame Langstroth hive provides ample room for many queens in use today. Therefore let us improve our stock by using better queens until only a large size hive will provide room for them, then the use of larger hives will increase our production. But until a 10-frame hive does not provide room for your queens you do not need to change hives, but to improve your queens instead.

Many of us are paying too much attention to color, gentleness, nonswarming, disease resisting qualities, and not enough to the number of eggs laid and the honey-gathering qualities of the workers. The former are important, but should not take the lead, as the honey stored is the source of our profit.

Then let us all enter the season with a resolution to increase our average production by keeping individual hive records, using only the queens that produce the most bees with the best honey gathering qualities, letting gentleness, color and similar characteristics be of secondary importance. Keep all queens provided with plenty of good empty combs and stores enough at all times. After you have your hives running over with bees give them plenty of super room and use every means to prevent swarming. Let nothing be lacking on your part, for it will take increased production to face the low price of honey, and the prospects for a better price is in the dim future.

Alabama.

VENTILATION

By P. C. Chadwick

Proper ventilation of the hive is a subject of considerable importance, which has not received deserving attention.

The theory of ventilation that is being taught in books on beekeeping and in bee papers is largely wrong, and some practices recommended in them are a detriment rather than a benefit to the colonies, if practiced as taught.

In the spring of 1920, on the advice of a prominent beekeeper of the San Joaquin Valley, I changed the size of most of my entrances from a three-eighth inch height across the front of the hive to that of seven-eighths. The theory was that a three-eighths height did not admit sufficient air for proper ventilation. I retained a number with which to experiment, that I might arrive at some conclusion of my own. I also began the study of ventilation from all angles that would seem to give me any information on which to establish facts.

I am discussing this topic from the standpoint of the San Joaquin Valley which has extremely high temperatures in the summer as well as a very dry air, yet I have no doubt that the conditions set forth will apply in many localities.

My observations have proven to me that a three-eighths inch entrance is preferable to that of seven-eighths, for the reason that one of the chief factors in ventilation is water. This is doubtless a departure from orthodox teaching, but nevertheless is a fact.

Evaporation is the element that keeps the hive cool, and had it been possible for me to have had the readers of this article with me during the past summer, I could have proven to all that my conclusions are not based on theory, but on facts.

The cooling effect of evaporation is not understood in the east as we understand it in the west, with a dry air. If the eastern housewife wrapped her butter in a wet cloth and laid it aside until the next meal, she would doubtless find it mostly absorbed in the cloth if the temperature was ranging from 100 to 110 degrees in the shade, but here it is done day after day, with the result that it is kept cool and firm by the evaporation of the water in the saturated cloth that surrounds it. Our houses are closed and the shades pulled down during the day time to exclude the hot air. The cool air of the night, closed in for the day, is worth more than electric fans to force the hot air from place to place.

The quantity of water used by a colony of bees for the purpose of ventilation exceeds that used for all other purposes, many times, the more unnecessary openings there are, the worse for the colony. A strong colony is able to ventilate sufficiently where one of less strength, especially where they are not able to cover all of

the combs, will succumb to the heat. Water is carried by the bees and placed in small quantities in the little wax indentations or cell-like cups on burr combs, which I shall term "water cups." The air being dry, evaporation begins immediately and has a very decided cooling effect on the air within the hive. A large portion of the water is carried to the top of the hive, which in turn causes the air to cool as it evaporates and passes down through the hive. Instinct seems to lead the bees to take this action, yet it is only following a law of nature which is well known, that hot air rises and cool air falls. The size of the entrance is then a very great factor, for a seven-eighths inch entrance allows too great an amount of the outer furnace-like air to find its way into the hive, increasing the task of maintaining the proper temperature. I noticed that when we were under an extremely hot spell the bees would hang out nearly as bad where the high entrance was used as where the lower prevailed, but in both instances it was observed the bees that had come from within did not clear themselves of the entrance, but banked themselves against it in a manner that would exclude the outside air. This proved to me, conclusively, that it was not for the purpose of admitting more air that they left the hive, but rather to improve the ventilating system within by opening up the avenues through which the air should pass. I also found that where the higher entrances were used and the bees did not come out on the outer part of the hive as freely as with the lower entrance, that they were banked on the bottom of the frames within the hive, for the same purpose that I have mentioned, that of excluding the outer air, which was above the temperature desired within the hive, the difference in the height of the entrance spacing allowing them sufficient room for banking between the bottom of the frames and the hive bottom.

The object to be sought then is not the admission of more air in extreme heat, but the exclusion of air to such a degree that the cooling effects of evaporation within will hold the temperature where desired. The beekeeper who on a hot day sees a colony hanging out is prone to raise the corner of the lid or tilt the hive to admit more air, and, in consequence, destroys the system of ventilation or causes a reorganization of the ventilating system that may be of very great detriment to the colony. One will rarely suffer the loss of a colony of normal strength where there is plenty of water near at hand, but the quantity of water used must not be under estimated. During a very hot day in this climate 200 colonies of bees will use close to 25 gallons of water, if they are strong and the nectar is not coming in freely. If there is a very heavy flow of nectar the amount of water will be less, due to the fact that they are able to utilize the water evaporated from the nectar to a great extent.

A large entrance is therefore not desirable, because it admits an excessive amount of hot air in the summer and cold air in the winter, and when the outside of the hive is the same as that within, it is not needed.

Two of the most conclusive observations that I have made were on a very hot day of the past July, the maximum temperature reaching 110 degrees. A small swarm that had been hived on full sheets of foundation in a 10-frame hive had drawn four frames fully, the fifth almost, while the sixth was being drawn. All of the drawn combs were on the side of the hive away from the direct rays of the sun and the colony was working toward the center of the hive from that side. A colony of this strength, in excessive heat, is very often overcome, due to the fact that they have no way to control the heat radiating through the side of the hive and filling that portion of the hive not in use. Being somewhat anxious as to their welfare, I opened this hive for examination. I found a condition that I had never observed previous to that time. They were drawing the sixth sheet of foundation when the seventh sheet was so soft that it would have been impossible for them to handle it. Removing the sixth sheet from the hive I found that it was being cooled with water; not only was there water in the shallow cells in many places, but it was being distributed directly over that portion of the foundation on which they were working. In this manner it was being kept at a temperature that enabled them to continue their work. On the same day I made an examination of several colonies that were nursing cells. Two of these colonies, while of sufficient strength to handle cells nicely in normal weather, were not strong enough to care for them in extreme heat when the energies of the ventilating force must be used to protect the brood nest properly. On opening these I found that the heat from the direct rays of the sun had driven the nurse bees from them and that in consequence the cells were literally cooked. In examining the cells in stronger colonies I found that practically every indentation on the cells was filled with water. Not one of these cells was lost and there can remain no doubt as to the benefit of the water that had been placed in this manner to hold the temperature at the desired point.

The use of water in ventilating is therefore second only to air in this valley, and it is my opinion that it will be found to enter largely in the system of ventilation everywhere.

There are other phases of ventilation that I might discuss, but this will serve the purpose of establishing a fact not generally known. And I hope it may cause some erroneous teachings to be checked, as well as to establish, through experiments in the future, what may be desirable in the way of an entrance. In concluding, I am constrained to say that we are as yet primitive beekeepers, for there is doubtless a field in front of us to conquer that is larger than all we have as yet accomplished.

California.

(The foregoing article is debatable. We have never seen water stored in the combs, in this climate. But since the writer of the article claims that bees act differently in a hot, dry climate, we are quite willing to have the matter discussed. We agree with him that there is a larger field for us to investigate than we have as yet conquered.—Editor.)

UNEDITED LETTERS OF HUBER

More About the Waxmoth

(Continued from March)

Lausanne, Dec. 1, 1828.

Did you not tell me, Sophie (Sophie was Mrs. De Portes, mother of Elisa), that you have in Bois D'Esly, probably in the attic, an old hive in which nothing is left but the combs? If I did not dream it, examine it at once, to ascertain its interior condition; the important thing is to ascertain whether it is or not tainted with moths. If it is, you will see it readily by bringing it to daylight (the webs woven by this dangerous enemy of bees will leave you no doubt); in that case, the hive should be destroyed for this reason: the wax, which is at the same time the home and the food of the larvæ of the moths, conceals their nymphs whenever they have attained this degree of development, and from these nymphs will come a legion of small moths whose first care will be to scatter in early spring among your hives and those of your neighbors; it is there that the females of the species are to deposit their eggs.

You will ask me how it is that those so vigilant bees, according to my statements, allow such dangerous enemies to enter their homes, and why, knowing it, neither your friend nor anyone else has yet been able to protect them against these. Let us first exorerate the bees, we will then try to exonerate ourselves.

Fruitfulness of Nature

You have surely noted, while caring for the plants that you like, that surround you and that grow in our gardens, our fields, our woods, the enormous quantity of seeds which serve to their annual reproduction and at the same time to sustain the life of the numerous animals which feed upon them. To perpetuate the existence of a plant, of an oak, for instance, one or two acorns would suffice; it is by thousands that we number them. You know that a queen can give birth to thousands of beings of her kind. The great multiplication of pigeons, of canary birds, etc., is known to you. You probably do not believe that our planet could feed all the beings which are daily born in its different climates; are they therefore lost? No; nothing is lost under heaven. We lack neither hawks to catch our pigeons, nor wolves to destroy our sheep and reduce their number to that which our

pastures can sustain; the equilibrium resulting from this wise disposition is one of the laws which conserve the universe. To have enough it was then necessary to sow too much. Before knowing all this, I remember a time when I cordially hated the enemies of the pigeons, of the sheep, of the bees, etc. I see now that those which I then called their natural enemies did not deserve that name; their existence, in my eyes now, is a boon of the Creator.

In spite of the wolves, the hawks, etc., created in the beginning of things, do we not still have now as many inoffensive doves, lambs, goats, bees, as we need? The number of the animals of prey is very small, while that of the animals which serve as their food is truly innumerable. Has Nature abandoned them without defense to the voracity of their pretended enemies? This is another thing which you cannot believe and you will be right; force alone is not sufficient for the bird of prey to master the game which nature has destined to it; ruse is also needed. Their doomed victims have also means of resistance; hunters know the means of defense that were granted to the game which they ordinarily pursue.

Since a Genevan observer (Jean Huber, father of Francois and a talented painter) studied the natural history of the birds of prey and has followed them with his eyes in the sky, we know their various modes of attack and those that are employed by the innocent and unarmed beings which are destined to serve them as food.

The Moth (Continued).

December 3, 1828.

I have just told you that the wax-moth was one of the most dreaded enemies of bees; all our hives are exposed to their attacks, however not all perish under their efforts; the strongest escape their ravages, the weak alone are sacrificed.

If you are as anxious as I am to learn what has been prescribed to the bees to protect themselves, their young and their treasures, from the dreaded invasions of their natural enemies, your own observations can divulge it to you better than I could, and may amuse you, while teaching you a part of their natural history which is not without interest.

During all the good season the hives are exposed to the ravages of the moths; although safe during the day, it is in the evening that the phalæna tries to enter them (you will remember that this is the name which the naturalists give to the nocturnal butterflies, to distinguish them from the day butterflies).

Habits of the Moth

To fully see their maneuvers, moonlight will be necessary. Select summer evenings and place yourself in front of one of your best colonies and close to it. See what happens at the entrance, on the board upon which they rest. The more or less numerous guards will first draw your attention; notice especially those which walk about in front of their door; all will have their antennæ extended and directed in front of their head, which fact will lead you to believe that it is feeling upon which they rely to know what happens, or might happen, to them, during the night time. You will not wait long before seeing some moths appear and recognizing their very marked desire to enter the hive, in spite of the guards and their fear of them. The phalæn evidently knows that there is some danger in approaching too near the guards; the timidity, the hesitancy of its bearing and all its motions indicate it; it is especially afraid of being met by the antennæ; if those of the phalæn meet those of the worker, one sees the phalæn fly away at once; the bee, warned by this touch, of the presence of the enemy, dashes upon it, seizes it with her mandibles and destroys it quickly if it does not find means of escape.

If the phalæn of beeswax conducts itself in this occasion as if aware of the danger which it runs, in obeying the instinct which draws it to the entrance of the hive and which is nothing but the urgent necessity of laying its eggs in the only place assigned by Nature, its young also seem to be informed of the peril which their stealthy introduction by their mother within the pale of the hive incur. That which can help us to make progress in the knowledge of the customs and habits of animals, from the elephant down to the mite or to the least worm, is, to my feeling and to my taste, the most enjoyable part of the researches with which I am occupied. Allow me then to enter into a few details.

The egg of the wax-moth is very minute, the insect which hatches from it is no less so, perhaps more so; it would be difficult and unsafe to assert that it is not seized with some fears; from the time of its birth, its behavior permits little doubt of it.

Reamur informs us that the first care of the hatching larvæ is to hide within the thickness of the combs upon which the eggs from which they emerged were laid. To escape the vigilance of the bees and the results which this vigilance would unfailingly cause, it is not sufficient for these little larvæ to bore through the wax, by eating that which is in their reach, and building for themselves a little cell in which they may be contained; it is also necessary that the bees should not perceive them; their organ of smell would soon cause them to discover them and exterminate them. The ability to weave a very strong silk has been granted to them; this silk serves them in building galleries or covered ways within which they can creep without being noticed and of which they increase the dimensions as fast as they grow and enlarge themselves. Another very singular thing is that their galleries are not made in the hexagonal cavities of the cells, where they would be too much exposed to the visits of the workers. It is always in the pyramidal bases of the cells that they direct and build the galleries, in which they may be better sheltered and crawl in safety. This skill would be very fatal to the bees, if they had no way to guard against it, but, as they are warned of the multiplying of this mortal enemy by touch, odor, or by some unknown sense, we see them rush upon the infected spot, break the cells and cut up the walls of those tubes, clear to the midrib of the comb; then, reaching the rhomboidal part, they pull to pieces the moths' soft galleries and the worms that they contain. This expedient succeeds very well when it is in strong colonies that the moths have dared enter; on the contrary, in those whose population has been too greatly depleted, it is the moths that prosper, the hives perish. If you visit them in those unhappy circumstances, you will find in them only the wax reduced to a black and noisome dust (the excrements of the waxmoth.—Translator), and the bodies of such of the moths as have starved or have been chilled in their cocoons before having undergone their last transformation, that is to say, before they have reached the degree of development in which, as perfect insects, those little beings have nothing more to acquire. The wings with which they are then supplied permit them to leave their prison, to live a different life and to give life to others.

Let us see now whether it would have been possible for us to oppose their ravages; it would then have been necessary to find the means of preventing them from entering the hives. If anyone has tried it, he has soon found it impossible; since those dangerous phalæns, being smaller than the bees, could not be kept out through the reducing of the entrances. You will notice that Nature employs a much more energetic method to prevent the wax-worm from penetrating within the hive, it is by leaving that care to its natural guards.

The potato caterpillar or death's-head moth larva is the largest of those which inhabit our climate; in its moth condition it bears the name of "sphinx," and that of "atropos," which distinguishes it from others and foretells clearly the ravages which it may do within the hives. I have described them in a memoir to the British Library; if I can secure it, I will take from it that which would interest you. You will see there that everywhere the resources of Nature and the methods of conservation are infinite, as is the kindness of its divine Author.

Your friend, my dear girl, commends himself to your interest and to your indulgence which is as dear as it is necessary to him.

(To be Continued.)

WAX-MOTH AND TUBERCULOSIS

In our January, 1921 number, page 13, we mentioned the possible usefulness of moth larvæ in tuberculosis treatment. Here is further consideration of the subject.

(Communication from Dr. Germain to the Society of Agriculture of Gi-

ronde, at the meeting of September 20, 1921, translated from "L'Apiculture Francaise, by the editor.)

I desire to entertain you today with a scientific question which is still being studied and which is of some interest to the beekeeper. I may give to this address the title of "The Relation of Galleria or Wax-moth with Pulmonary Tuberculosis."

You are all acquainted with this enemy of bees, filthy, ugly moth, whose very prolific female lays her eggs upon the combs of hives or in the corolla of flowers, from which the field workers bring them back to the hive without knowing it; the eggs hatch and give birth to a very lively little worm which destroys the combs by feeding upon the wax.

You know also of the terrible ravages of pulmonary tuberculosis in our human society—frightful disease which desolates our cities and our countryside and preys upon 120,000 to 150,000 victims in France every year. It is one of the most disseminated diseases; numerous autopsies give cause for the supposition that most of the human beings are tainted with it. Many overcome it and do not become tuberculous.

How, then, does the organism defend itself? The savant Metchnikoff has conceived that, in the body, the microbes were destroyed by the white globules of the blood, which, seizing the microbes, devour them and digest them. But the bacillus of tuberculosis is very resistant, for it is surrounded by a fatty capsule which is comparable to beeswax by its properties, and the human organism is little able to digest wax.

Dr. Metchnikoff, from whom a masterly article, published in a scientific journal, has given me the subject of this address, Dr. Metchnikoff, I say, has studied the animals capable of digesting beeswax; such animals are very rare, but they exist; as an example, the worm of the wax-moth; beeswax is an aliment for it; without wax it will die.

Dr. Metchnikoff introduced within the body of these worms considerable numbers of tubercle bacilli without any damage to their life—microscopic examination demonstrates that the white globules of this larva rapidly and thoroughly digest the tubercle bacillus.

The study of the blood of the worms caused him to discover a ferment capable of digesting fatty substances, and beeswax is a fat. This ferment is also found in man, but in very limited quantity in the tuberculous people when in full disease. All these questions have been studied by Russian savants, to whom I give homage in passing and whom I salute with emotion while they are living the life of martyrs, in the House of Intellectuals in Petrograd, starving to death under the foul tyranny of the Soviets.

The studies of Bouchard, Dabelle, etc., proved that those individuals who ill digest fatty substances are the most subject to the danger of tuberculosis. At present many of the treatments consist in supplying to the body fatty materials; I will not expatiate upon the series of experiments made by the savants of all countries proving that the white globules of the blood may, in certain conditions, digest the tubercle bacillus; but the cells of the vertebrates are ill adapted for the digestion of beeswax; they require months and years; while in the worm of the wax-moth, they require but a few hours, a few days.

Still, Dr. Metchnikoff estimates the human body as admirably organized to fight, since we are nearly all attacked by the disease and only a few die.

"You must not seek for serums and antitoxins," says he, "but you must strengthen the cells which serve in the fight against the microbes." Perhaps he will succeed in securing from the bee's parasite the necessary ferment, which, injected into man, will give him noticeable immunity. Should he succeed in this very soon, his name will be among those of the greatest benefactors of the human race.

Meanwhile, he counsels good and substantial food, and I add honey, the pure air of the country, a non-exhausting occupation, moral quietude; if I am not mistaken this very much resembles the life of the beekeeper; the hours of observation spent in the apiary, are they not those of a sage? But is it possible, this dream of peaceful life among the humming of the bees, when man would feed upon honey, and drink metheglin? Alas! we must live with the century and suffer its ills; the wax-moth will ravage our hives, tuberculosis will ravage humanity; but we may hope for some day when, thanks to Dr. Metchnikoff, mankind may be happier, as it will have overcome tuberculosis; thanks to the beekeepers, for without beekeepers there would be no hives, and without hives no bee parasites.

I will close by giving homage to all the beekeepers who surround me; many had no idea of the great role which they may play; I advise them to get rid of the undesirable bee-moths, sending them to the laboratories of our faculties, whence for our happiness they may never emerge.

Dr. Germain.

INCREASING THE DEMAND FOR HONEY

By E. S. Miller

I believe that ultimately, honey, like other foodstuffs, will be marketed chiefly through the retail grocers. During the last few months, more honey has been distributed than ever before in the same length of time, largely through roadside sales to tourists and by house-to-house canvassing. House-to-house selling disposes of a large amount of honey at times, but this practice tends to kill the market, for the reason that where canvassers fill up a town or a portion of a large city, grocers refuse to handle this line of goods. The result is that when the honey sold is consumed no more can be obtained until the canvasser returns, perhaps several months or a year later. In order to create a permanent demand for honey there must be a constant supply, which can be had only through permanent dealers in foods. Then, again, canvassers often dispose of an inferior grade of honey purchased at a low price and sold at an exorbitant figure. In fact, the margin must be large in order to make this mode of marketing profitable. These things tend to discourage the consumer from again buying at any price. Then, to further demoralize the market, there is the farmer beekeeper who frequently peddles his surplus at a ridiculously low price, often retailing it at less than wholesale market price and less than the cost of production. It is no wonder that the grocer becomes disgusted and refuses to handle honey. There is no doubt that far more honey could be sold were we to let the retail dealer do the distributing and advertise the fact that he sells our product.

In order to create a permanent demand there must be not only a constant supply but there also must be publicity through advertising. The advertising should be local, state and national. Assuming that there is no co-operative marketing agency in the field, every honey producer who is near a potential market should advertise constantly in his local papers, and when his crop is disposed of he should buy from other producers. A given territory advertised thoroughly is more productive of results than is a large area covered and worked spasmodically. In advertising, the matter should be changed frequently. One should aim to make it interesting and instructive. It should give, each time, some new item of information concerning honey and its delicious qualities as a food. I do not think we gain much by emphasizing the use of honey in cooking. It is better without cooking; besides, people are apt to get the notion that it is good for nothing else.

Where there is no producers' marketing agency, it is very probable that many state organizations could profitably carry on a campaign of advertising. It could be financed by listing the names of producers who are willing to pay and to comply with certain requirements. The names could be listed directly in the advertisement or in circulars sent to prospective purchasers.

But to create a state or local market alone is not sufficient, for if this is done, there is nothing to prevent outside honey from coming in and underselling our home product. Many cars of western honey are being sold in our eastern cities and the honey is being distributed to smaller cities and towns at a price too low for local beemen to meet and make any profit. What is needed is an increased demand in every state, resulting in better market conditions as a whole. To meet this requirement there was organized the American Honey Producers' League, with its scheme of national advertising. I believe that it is to the commercial advantage as well as the duty of every producer to give full moral and financial support

to this organization. Its success will be measured by the support it receives from its membership, and we cannot afford to let it languish for want of funds. By co-operation and united effort the American Honey Producers' League, with its various activities, can be made the most effective instrument for the advancement of beekeeping interests that has yet been brought forth. Let us put aside petty jealousies and let every state cooperate with the National League to the end that the interests of the whole industry may be advanced.

Indiana.

YORK AND THE DEALERS

By Oliver Sires

I have read with interest the two articles published in the American Bee Journal for January on direct marketing of honey.

Mr. York is a buyer and seller of honey and of course gives mainly the dealer's side of the question. He cries for protection for the dealers, and that if the producer does sell to the consumer he must add to his selling price the profits of the retailer, which is sometimes as much as 25 to 50 per cent, which would cut out the direct-to-the-consumer program entirely. That would be all right as far as the dealers are concerned, or from their view of the marketing situation. I happen to have a sample of honey which came from a wholesaler in Seattle, Wash., which he said was shipped in from Guatemala, Central America. What could it be made from? And such a "foreign" flavor! I wonder if this sample of honey could be the same as that 100 tons recently imported from Central America to a certain city which Mr. York did not mention, and was on a par with California sage honey. If it is, a very little of it might be mixed with our best quality Yakima Valley alfalfa-sweet clover honey, but the less the better for all concerned.

I am a producer and sell to both the dealer and the consumer, and try to be fair to both. I have some good customers among the dealers. But under present selling conditions it would hardly be fair to cut out selling to the consumer who buys in like quantities at the same price. I sell mostly in not less than case lots, but when I do get an order for a 2½ or a 5-pound pail, I add the extra cost that it takes to fill an order of this kind above the regular shipments. Such orders do not cut much of a figure in honey sales and are only considered in the light of future larger orders. "Finding a market for his honey is one of the greatest problems the beekeeper has to face," says Mr. Nordan, and "the only way of facing it is by increasing the consumption, by educating the public." This is a point overlooked by buyers and dealers who kick against the producer for selling his honey in like quantities at the same price to consumers. This advertising and selling honey direct is one of the best means of educating the public to eat honey, and I believe, in general, it is creating a greater demand at the retail stores. In the past, local dealers have been rather indifferent toward buying honey of the producer, claiming there was not much demand for honey, and seeming to care less whether there was a demand or not.

This has been my experience and that of others whom I know. These things are changing now, and honey is being recognized on its own merits.

Under present marketing conditions I don't see how the producer of honey can be blamed for selling his honey in any way at his command.

It sems to be a difficult matter for the producer and the large buyers to come to a satisfactory agreement on prices to be paid for honey; so the larger buyers make use of every means in their power to beat down prices. I suppose this would be the case even if the producer would offer his honey at the ridiculously low price of 6 or 7 cents per pound. One of the methods used to beat down prices is to find some producer who is financially stressed and make him a very low price, and if the price offered is accepted, then try to establish the market price on the basis of this sale by refusing to pay more to others in the same locality. This may be all right, but if it is, don't attack the beekeeper for using the best means at his disposal for selling his honey, even at the risk of being called "unbusinesslike."

If the beekeepers of the country ever expect to match the business methods of **some** of the big honey buyers, they will have to go some.

Co-operation and education may solve the problem, but that takes time and money.

Washington.

HONEY SELLING

By John Arbtin.

In the January number of the American Bee Journal are several articles about marketing of honey. For my part I think that selling honey below cost price is a very bad thing to do. If the American Honey Producers' League could establish a uniform wholesale and retail market price for honey of different grades they would do very much good to the honey producers; also if they would establish a standard package for honey it would help a good deal.

I use Dadant Modified hives and consequently all of my honey is extracted. The retail price of honey around here is about 25 cents a pound. I use 10-pound pails and 3-pound Mason jars only. I am located on a highway just outside of town, and I have a sign put up "Honey for Sale." My honey is extra fine. Everyone who has tested it says so. I sell one dozen jars of honey for $9, or 25 cents a pound wholesale, and I ask the retailers to charge 90 cents a jar, also to tell the customers that if they will bring back the same jar it will make a reduction of 10 cents on the next purchase. I charge 30 cents a pound at home on all retail sales.

Now, in this locality, people use mostly comb honey. Lots of people come in and ask for comb honey and nearly all carry away a jar of extracted honey, and in nearly every case they come back later and want more of the same kind.

The worst trouble is that some beekeepers try to sell unripe honey in the fall at cut-rate prices. I know one party who had a lot of comb honey which was so thin that when he held the combs sideways the honey would drip out. He told me he would sell that honey at 15 cents in order to get rid of it. I told him not to do it.

I will mention one other case. I left some honey with a certain party to sell for me on commission. He was to charge 30 cents a pound for it. One other party brought in some very thin honey and offered it for sale at 20 cents a pound. Someone who had bought of my honey bought some of this, but after they had tasted it they told my man they would have no more of it. They would sooner pay a good price for good honey than to pay a low price for an inferior grade.

All honey producers ought to be members of the state and national organizations. Said organizations should fix standard grades and prices for honey, also issue seals, to be affixed to the honey packages, by its members. These seals to be a symbol of purity and honesty. Any member who should intentionally violate the rules and regulations should be deprived of membership rights in said organization and the seals should be taken away.

Said organizations should mention in their advertisements what these seals mean, also ask the customers to report any members who sold honey not properly labeled.

Iowa.

CATALEPSY IN QUEENS; DEATH FROM FRIGHT

By E. S. Miles

Under the above heading, in the American Bee Journal for February, Dr. Brunnich tells of some interesting experiences with "fainting" queens, for fainting is what we ordinary beekeepers would call what he calls "catalepsy."

I have had quite a few cases of fainting in young queens, in fact I do not recall ever having a case of it in a queen over a year old. I believe it is caused by fear or excitement, or both.

I do not understand why an older queen should not be as easily frightened as a younger one, either, but they do not seem to be; or if so, certainly do not show it in the same manner.

On this account, we do not now clip our young queens the first season, except where there is a probability of a swarm coming off with such a queen, which is not often, as it is a well-known fact that a colony with a

newly mated queen is not likely to swarm, if rightly managed as to supers, shade, etc.

We prefer to clip them about fruit bloom the next year. At that time they are laying heavily and the bees handle as well as they ever do.

The Doctor says in his article that he has never had a queen fail to do well after one of these fainting spells.

This is what has impelled me to write on the subject. A couple of years ago I clipped a young queen, one that had just been laying a short time, and she "fainted," and I can say she certainly failed to do well afterward, as she never came to, at all.

I have seen perhaps a dozen or so "faint"; they just fell over as if dead, and in from one to two or three minutes they begin to move their legs a little, and then very soon they are as well as ever, as far as one can see.

Well, I watched this one for some time, probably 10 minutes or more, then I placed her on top of the frames and left the hive for an hour or so; but on returning, the queen was found on the alighting board in the same condition. I confess I did not quite believe a queen could die of fright, and I returned her to the inside of the hive again, but to no avail, the colony showing queenless. Now don't say "you pinched her, or injured her in handling," as I did not. I never take hold of a queen in clipping, but catch her by the wing with the forefinger and thumb of the left hand, let her grab my knee with her feet, and clip her in that position, putting her back by letting her step on the closed scissors and then transferring her to the comb. I will say, too, that I have been clipping queens for 30 years, having clipped probably several thousand. The young Italian queens are many of them quite "scary" when first mated, although some of them are not so much so as hybrids. The queen I refer to was an Italian. I believe, in view of this experience, that it is advisable to let young queens go over to the next spring after mating, to clip, where no danger of losing a swarm exists.

I believe the Doctor has given the correct explanation of the cause of the young queens fainting, viz.: fright from the unnatural surroundings in which they suddenly find themselves.

Iowa.

SOME MORE ABOUT CATALEPSY IN QUEENS

By Allen Latham

Dr. Brunnich (page 69) has chosen a suitable name for the peculiar mishap which occasionally befalls a queen. I had called it shock and paralysis, but consider that the term catalepsy is superior in every way.

Like Dr. Brunnich, I thought the trouble fatal when I first saw it, and I believe that I tossed the first queen into the grass and gave the bees another. It happens, however, that this trouble comes only to high-grade queens. In my experience I have never seen it occur to a queen in a lean condition, but only when the queen's abdomen was greatly distended. I think it was the second case which came under my observation that the queen was a highly valued one. I let her lie in the palm of my hand while I bemoaned my loss. Suddenly one of her legs moved a little, then she began to pant for breath, her abdomen pulsating slightly but rapidly. It was not five minutes before she was on her feet and cleaning her antennæ. I put her back and the next day she was acting in a perfectly normal manner.

Within the past five years I have seen so many cases of this catalepsy in queens that I have studied it in its entirety. One can bring it on if he wishes, proper conditions being present. Pick queen up by wings in such manner that her legs can grasp no object. She will strive to get a foothold upon something and will eventually catch a claw upon the tip of her abdomen. She pulls her abdomen into a cramped position so that the under side must be greatly compressed. Immediately, if catalepsy is to occur, her legs and entire body become set. She is apparently dead, with her claw still clinging to the scaly protection of her ovipositor, or shall I say ventral scale? After a short time the rigidity disappears, the legs become limp, the claw slips off, and the queen lies prone with her legs in a natural position, a position halfway between that of resting upon the comb and that of the nymph.

The position of the queen at this stage is identical with that of a laying queen which has been stung by a virgin. Neither queen is dead, but each is numbly helpless. There is this difference, one will die, the other will live.

I trust that Dr. Brunnich is right in his opinion that the queen is uninjured by the mishap. I know that queens apparently fully recover and go on doing good work. It seems incredible, however, that she can receive such a shock and never suffer eventually thereby.

My own conclusions about the cause are as follows: As I have never seen the mishap come upon a poor queen, only upon queens of unusual fecundity, and then only when they were huge in their abdominal development, it seems obvious that it must come from pressure upon certain of the nerves which have to do with the sex-organs of the queen. When one considers that a queen lays possibly 4,000 eggs in 24 hours and causes the impregnation of every one of these eggs he must feel assured that there is a very sensitive and highly-strung piece of machinery in that queen. When interrupted during her egg-laying, grasped by a wing for purpose of clipping, perhaps, her struggles bring undue pressure upon that center of nerves controlling the fertilization of those thousands of eggs. The result to the queen is the same as to a man when hit in the solar plexus. Temporary incapacity is the usual result.

Quarantines

The New Zealand Fruit Grower, in a recent issue, contained a very interesting article on the desirability of plant quarantines, quoting from an article in the National Geographic Magazine on the work being done by our own Department of Agriculture in combating the importation of plant pests. This plant "Ellis Island," has been the means of excluding many plant pests, sometimes cunningly concealed; at other times unknowingly included in shipments.

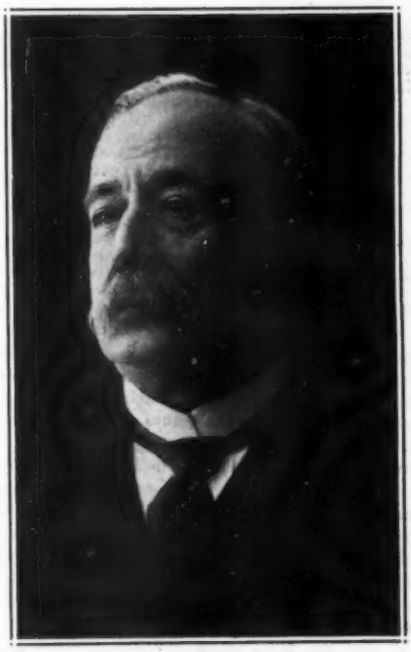
The question of quarantine against shipments of bees and queens into this country we understand is being agitated, owing to the danger of importation of acarine disease, which, so far, has not been found on the North American Continent.

BEEKEEPERS BY THE WAY

Our Friend, the Editor

At various times in the past the likeness of one or another of the editors of the various bee magazines has appeared in our columns. Editor Scholl, Editor Root, Editor Demuth and Editor Wilder have all been introduced to our readers, as well as some of our foreign contemporaries, including Digges, Abushady, Herrod-Hempsall and Cowan. Since frequent mention is made of the Western Honeybee, the magazine published by the California Beekeepers' Association, we feel sure that our readers will be glad to see the face of its editor, Mr. S. S. Knabenshue.

The Western Honeybee is a breezy little publication devoted to the interests of beemen of the Pacific Coast, and its visits are always welcome. We extend our best wishes to Editor Knabenshue.



Editor of Western Honeybee.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

Moving Bees

I have a chance to buy 20 colonies of bees, a quarter of a mile from my apiary of 35 colonies. If I move the 20 to my apiary this winter, would they go back to their old stand in the spring? The bees have been inspected this fall and are O. K. NEW YORK

Answer.—Moving bees a short distance in winter is not very safe, as they may go back to the old spot, if they have an occasional warm day. It would probably be better to wait till a warm day of spring, close them up early and haul them before the warm part of the day; then open and release them at the time when they can fly, using a slanting board in front of each hive, so they may notice that their home has been changed.

The more disturbed they are at the time of release, the more they will feel as if in a swarming condition and the less likely they will be to go back to the old home.

If you are afraid that some bees may go back, leave one or two of the weakest at the old spot. The returning bees will join these and they may be moved a little later.

May Disease

I wish to state briefly a condition in my apiary which is puzzling me. I went out to the bee yard one morning about a week ago and behold, the alighting boards of three of my colonies were covered with dead and dying bees. These bees are Italians, requeened in 1920, and had wintered well and were then wrapped with tarred felt paper; brood rearing was in full swing and pollen from dandelion and apple blossom coming in in large quantities. From that time until now this condition has spread to other colonies and some of them very strong in bees. Even the brood seemed to die. The bees act spent out, stupid, as though chilled; they crawl on the grass, turn over, kick their feet, and seem to be in discomfort. No doubt it is a dysentery, as the alighting boards are stained a light yellow and their intestines, though not badly distended, are not in normal condition

My first thought was that the bees had gotten poison spray, but chemical analysis at a nearby laboratory did not show arsenic, but there was a large amount of undigested pollen in their stomachs and intestines.

Could this condition be produced by a poisoning due to large consumption of pollen? I have tried sprinkling with salt water, as is recommended for bee paralysis or May disease, but this seems to avail little. My bees are not black and greasy looking, but they appear as healthy bees except for their stupidity.

Can you give me any advice or help in this matter? I surely will be grateful for anything you may have to offer. I may add that the bees about me are not dying that way. There seems to be no foulbrood. Stores are sufficient in these colonies. WISCONSIN.

Answer.—This appears to be what is commonly known as "May disease." I am sorry to say that although this disease has been known in many different countries, no one has yet been able to give its cause or offer a positive remedy. The new discovery of what is called *Tarsonemus woodi* in England, which is said to be the cause of the Isle-of-Wight disease, may enlighten us. This *tarsonemus* is a mite which lodges itself in the breathing tubes of the bees. Those of us who are thought to know the most about bees realize probably better than the average beekeeper how little we know and how much there is for us to learn. So far the mites have not been found in America

I would suggest feeding the bees with sugar syrup, made with some tonic, such as ginger, allspice, etc. That remedy was much recommended in the province of Ancona, Italy, for this same disease.

The only point in which your trouble fails to agree with the description of May disease is in the fact that your bees are not shiny and greasy looking. But in the other symptoms it agrees with the May disease, as usually known.

The honey crop will probably put an end to this trouble.

Vinegar

Is honey vinegar, or vinegar made from it, as strong and good to use in foods as the vinegar we buy in the store?

Answer.—The strength of vinegar, whether made from cider, wine, honey water or other liquids, depends entirely upon the strength of the liquid from which it is made, or in other words, upon the amount of sweetness in the fruit juice or honey. The more sweetness, the more alcohol, by fermentation. The more alcohol, the more vinegar, although there is a point at which the quantity of alcohol prevents the production of vinegar. Originally vinegar was sour wine (*vin aigre*), but it is made also from other fruits than grapes. A pound of honey to the gallon of water, with some fruit juice to start fermentation, will make very weak vinegar. A pound and a half will make fair vinegar. Three pounds would make it too strong for a quickly-made vinegar.

Honey Flow—Feeding—Uniting

1. In an ordinary season about when does the honey flow begin here? (Chicago). When with reference to apple bloom?

2. I intend to put on supers (shallow) before I permanently unpack my bees, and they are well packed all around. About when should they be put on?

3. I suppose the warmer it is the better, when the hive is opened and supers put on, but what is the lowest temperature that is proper? For instance, should I open the hive when it is 60 above?

4. I am inclined to believe that one hive has not a large amount of stores, and I would like to feed early. Over the hive tops I placed a shallow super and in that place a bag of bran, then top, then leaves. I have some standard size frames full of honey. I thought I would remove bran, open bee escape hole and lay 2 or three frames at an angle in the super and let the bees take the honey down stairs. Would that be O. K? How early should it be done? At what temperature?

5. Last year there were two swarms from one hive. I put them in shallow supers, with foundation and then put them back on the hive they came from. One was put on about a week after the other. I did not want any more hives. That made one queen below queen excluder and two above. But I never saw any brood or eggs in super and honey was all sealed and removed in August. What happened? What effect would such a performance have on a hive? CHICAGO.

Answers.—1. I believe your honey flow is from white and sweet clover. If so, it would probably begin about June 10 to 20, sometimes earlier, sometimes later. With us, apple bloom is about 5 weeks earlier, but at Chicago it must be only about 3 weeks.

2. Putting supers on when unpacking bees in spring is a little premature, as you do not know then whether your bees will not need help. But if they are strong, it may be all right, though we prefer to do it when the first clover blossoms show.

3. Hives may be opened safely whenever the thermometer is at 60 degrees or more. But it is not advisable to leave them open long, when they breed, as they need a temperature of about 96 degrees for brood rearing.

4. Your plan to feed by giving combs in super is all right. It had best be done whenever the bees run risk of being short of stores.

5. What happened is what might have been expcted. The bees concluded they needed only one queen and probably got rid of the others.

Yield—Size of Hive

1. Am I below or above the average of Minnesota? I got an average of 135 pounds of honey in 1919, 150 in 1920 and 260 in 1922.

2. Would you advise me to change equipment or strain of bees or management in order to get more honey? I am using eight-frame hives, Langstroth dimensions, with 4½ inch supers and golden bees.

3. About two thirds of my honey is of a very dark color. How can I change it to a light color, as it sells more readily? MINNESOTA.

Answers.—1. You are surely above the average. Either you have a very favorable location, or unusual crops, or you are giving your bees exceedingly good management.

2. Although we prefer a larger hive and a larger frame, we do not advise you to change. Dr. Miller succeeded well with the eight-frame Langstroth hive. Much depends upon the management.

3. There are tens of thousands of beekeepers who would be glad of an answer to this question. Changing the color of honey without impairing its flavor is, so far, an impossibility. In fact, there is an easy way to make light honey darker, and to impair its quality, by heating it, but no way has yet been devised to make honey lighter colored, as far as we know. Will some one discover this, by and by?

Honey Plants—Restless Bees—Painting Hives

1. Is buckwheat as good a honey plant as sweet clover?

2. Does sweet clover produce blossoms if planted in the spring, the following summer?

3. About how big a patch would it take for about 50 colonies?

4. I purchased ten colonies and hauled them 9 miles on a wagon and they seem to be restless ever since. I put them in the cellar on November 7. They buzz and fly out on the floor and die. It is quiet and dark. They are in 10-frame hives and have a lot of stores.

5. The hives I bought are not painted. Could I paint them with the bees inside, and what kind of paint should I use for it, and when should I do it? MINNESOTA.

Answers.—1 and 2. Buckwheat and sweet clover are not to be compared to each other. Buckwheat blooms only in the latter part of the summer and yields honey only in certain localities. Sweet clover, the biennial, blooms the second year and begins to bloom before the middle of summer, lasting usually till frost. The annual, or Hubam, sweet clover blooms the same year, but its seed is yet too high in price to make it desirable on a large scale. It will soon be plentiful, however. Both buckwheat and sweet clover are good honey plants. You had best try both and see whether they are suitable for your locality.

3. I cannot answer that question in a satisfactory manner, because the yield is irregular and what might yield a large amount of honey one year would perhaps yield but little the following year. I don't believe that less than 25 acres would be worth while for 50 colonies. More would probably be still better. In fact where the big crops of alsike, white clover and alfalfa are harvested, there are hundreds

of acres within reach of an apiary.

4. If those colonies were put in the cellar without having a flight, it is probable that they suffer from wanting to discharge their waste. But it may also be that your cellar is too cold or too warm. Between 45 and 50 degrees is the best temperature for bees in a cellar. Avoid disturbing them until time to remove them.

5. Hives may be painted while the bees are in them. But it is difficult to paint around the entrance without causing some bees to get daubed with paint, in which case they will not only spoil it, but will die from this cause. It would be better to transfer the colonies into other hives, then paint these and preserve them for swarms. If you could paint the hives during ugly days of spring, when the bees do not fly, it might dry before they come out. On the other hand, in bad weather you may have rain, and it will spoil the paint.

Heating Granulated Honey

1. I have a 500-gallon storage tank for my honey. I thought I would make a foundation of brick masonry under my tank just a little wider than width of tank, something like a foundation around a wash pot, only I wanted a steel plate placed over this foundation; on this steel plate place the honey tank to keep the fire from burning direct under bottom of tank. Now place a small fire under the tank and let the honey heat slowly until the whole tank of honey would be tnoroughly heated, not letting honey reach the boiling point. Do you think that this plan would work, or do you think that the honey at bottom of tank would get too hot, or that it would stay hot too long before the honey on top would be well heated, so that it may spoil the flavor, or that the honey would turn to a dark color?

2. What is the correct temperature for heating honey?

3. How long must it be heated before it has a correct treatment that it will not granulate so soon? The reason for asking this information is that all honey I want to ship to Texas Honey Producers' Association must be heated before they will allow me to ship it out.

TEXAS.

Answers.—1. No, that tank would not do to heat your honey. There is too great a bulk and some parts of it, next to the bottom, would get overheated before the rest could get heat. You must understand that honey is not like water, which moves rapidly in a kettle as it gets warm. Honey is more sluggish. Probably if you were to make an outer tank and rest this one on the inside with 3 or 4 inches between the two, it would work. But a more economical way is to put your honey in 60-pound tins and put them inside your tank, with water around them, after you have built such a fire place as you figure upon. Put some blocks between the bottom of your tins and the bottom of the tank, so the water may circulate. Of course you must keep your tins open, else the heat would burst them, as the honey expands.

2. Honey ought not to be heated beyond 165 degrees.

3. If you get it all hot enough to be thin, some water will evaporate. You will lose some on the weight, but it will probably not granulate. But as far as giving satisfaction to your Honey Producers' Association, it will probably be best to ask them the questions directly. They may have better suggestions than these to make to you.

Paste for Tin

1. Can you advise how I can make a paste that will stick labels to honey tins so they will stay? My labels usually come off sooner or later.

2. If a satisfactory paste cannot be made in one's home, where can same be secured?

ONTARIO.

Auswers.—1. Our method of making paste is to dilute flour in water, so as to make a creamy liquid, free from grumes or clots. This is important. Then heat it on a stove, stirring constantly until it is reduced to proper consistency. Remember that it will thicken in cooling. If you wish to preserve it for some time, add a little alum when making it. Some say that a little honey added will help it to stick. You may also buy printers' glue in quart tins. This works fairly well.

The complaint that labels do not stick to tin is due to two causes. The paste may have been too thick. Also some labels are made of so strong a paper that they shrink in drying, and thus peel off. Labels of very thin paper stick best. Personally,. I have never had trouble in making labels stick.

Double-Story Hives

I have several stands of bees in light frame hives, and last spring I decided they were too small, so I ordered hive bodies and doubled them. I did not put them on till the hives were full of young brood, and in a short time after that they began on the top and most of the queens stayed there and did not go back to the bottom, and the bees stored all their honey in the top and the frames below are empty. Would it be best to take the bottom off or put it on top, or leave them as they are?

TENNESSEE.

Answer. Evidently the crop was too short for your bees to store the upper story full of honey, otherwise you would have found them occupying both stories, the upper one with honey. Under the conditions which you describe, I should either leave them as they are or remove the bottom story which is empty. But I would not under any conditions place that empty story on top until the spring opens, when the colonies are breeding plentifully. If you strike a good season, you will find yourself pleased with the double stories.

Sesamum

A. W. Puett, of Jones County, Texas, in the November, 1921, number, says he likes sesamum. I do not find it listed in the flora of British Columbia. Has it got some other name, and what is it good for besides being a honey plant? Where could I buy a pinch of seed; also how big is the seed, and will it do for chickens?

BRITISH COLUMBIA.

Answer. Sesamum has no other name. Its etymology is from the Arabic language "semsen." The variety most used is called *Sesamum indicus*. We cannot do better than quote what was said of it in American Bee Journal for April, 1921, page 142:

Sesamum is widely grown in India for the oil which is secured from the seeds. This is one of the best vegetable oils for table use. The Arabs prefer it to olive oil; it is free from any unpleasant taste and congeals far less readily than olive oil. It is cultivated as far north as latitude 42 in Japan, and is said to succeeu well in the milder regions of Victoria, Australia. The seeds are said to be very rich in oil, yielding 45 to 50 per cent. Nearly a million acres of sesamum are grown in the Madras Presidency, India, with large areas in China, Japan, Africa, etc.

We could furnish you a little seed if you desire. It is very fine in size, being similar to turnip seed. It might do for chickens; we have not tried it.

Sesamum oil is said by the Dictionnaire Larousse to be used as a cosmetic in vogue among the women of the Orient, giving their skin and their hair a soft and flexible quality.

Drone Comb—Foundation—Transferring

1. Should bees be compelled to build new comb in brood chambers every 2 or 3 years to keep the number of drone cells from getting too great? I have 2 or 3 colonies of bees that have never made me any surplus honey. They are swarms of about 3 seasons and always seem to have such an unusual number of drones. Would it be advisable to transfer these to a new hive? If so, how would I go about it?

2. After the bees are in the new hive what should I do with the unhatched brood? Would it do to put a zinc on top of the new hive and set the unhatched brood on the top of the same, so that the young bees could be with the rest as fast as they hatched?

3. Would bees move honey below?

4. Please give me full instructions as to transferring bees from one hive to another.

5. Will the old combs do to store honey in? Would they discolor the honey or change its flavor?

6. Will deeper brood frames tend to control drones to any extent?

7. How early, in Iowa, would it do to transfer?

8. What are the dimensions of the large size Hoffman brood frames?

9. Can bees store away sugar syrup after being transferred when they have no comb but starters given them?

IOWA.

Answers.—1. It is not necessary to get bees to build new combs often, if they are built properly first. Be sure they are built on comb foundation and that they are not overloaded with bees when first given them. It is customary with us to allow good colonies to build out combs of foundation to be used later for swarms or divisions. If you are careful you will have but little drone comb. When you find drone comb, remove it and replace it with worker comb. It is quite likely that those colonies which have never given you any surplus honey have too many drone combs. Examine them. Rear your drones only from one or two of your best colonies. You cannot entirely do away with drones in every hive, but you should have only a hundred or two, instead of the thousands that are often found in colonies left to their own devices. It is not necessary to transfer such colonies to new hives if they have good straight worker combs in the frames.

2. If you transfer bees, you may fasten the combs of brood in the frames of the new hive. We never allow any brood to be wasted in spring. You may put it in the super above the brood nest to hatch, but you must make sure that the bees have facilities for keeping it warm until it emerges from the cells.

3. Yes, bees move honey to where they need it, usually from below to above the brood.

4. Instructions for transferring bees require a special article, which we publish from time to time. The bees are driven from the old hive to an empty box and placed upon the stand of the hive. The combs are transferred and fastened in the frames of the new hive, all except the old black combs, the crooked combs and the drone combs. Then the new hive is placed upon the original stand and the bees shaken in front of it. They soon fasten the combs to the frames, so that they look as if they had been built there. This is done during fruit bloom.

5. Old combs are all right for the bees to store honey in, and they do not discolor the honey.

6. The depth of the brood frames has nothing to do with the building of drone combs; bees in a state of nature build from one seventh to one-tenth of their combs of the drone size. It is for us to regulate this matter, as we regulate the keeping of roosters, bulls or stallions.

7. Transfer bees when the fruit trees bloom.

8. The Dadant modified Hoffman brood frame is 11½x18¾ inches outside.

9. If you transfer bees it is a mistake to give them only starters. They will, of course, build combs, but they will do it out of the sugar syrup which you will feed them, and you will find it exceedingly expensive. Full sheets of foundation should always be given.

Feeding—Increase

1. How long does it take for an average

stand of bees to consume 3 pounds of sugar syrup from a Doolittle feeder?

2. Have you any other good method of artificial swarming, or dividing than the Demaree plan?

3. How would it be to give each swarm an extra hive of combs early in the spring, for the queen to lay in, and at the proper time remove top hive to new location and requeen; or would it be best to take the old queen with the top hive to new location? At what time should the nucleus, to be divided, be requeened?

4. How many days after destroying a queen should the hive be queenless before requeening?

5. In case of disease, how long should frames and division boards be boiled to kill the disease? IOWA.

Answers.—1. The time which an average colony will require to consume 3 pounds of sugar syrup depends upon the season and the amount of brood rearing that they do. In winter, in the cellar, it would do them more than a month. In spring, when the weather is warm and they are breeding heavily, they may consume it in a week, or perhaps even less.

2. There are many different methols of artificial swarming, but the Demaree method is good. Read the text-books on the subject. The Langstroth-Dadant "Hive and Honey Bee" gives several good methods.

3. The method you suggest is good. But when you remove one of the bodies to a new spot, it may be advisable to give it the queen, as it would lose all the flying bees and many of the young bees in it when they find themselves queenless. Requeen immediately. By the Demaree method you may be able to rear queen cells before the hives are taken apart.

4. If you wish to introduce a new queen, put her in at once, before the bees have time to know that their queen is gone. Keep her caged for 24 to 48 hours.

5. The experimenters tell us that it takes a half hour to kill the germs of foulbrood. The hives had better be singed with a blow torch or by painting them inside with coal oil and setting on fire for a few seconds. It is quicker and cheaper than boiling and even more effective, as nothing can withstand fire.

THE AMERICAN LEAGUE MEETING

The third annual meeting of the American Honey Producers' League was held at Salt Lake City, January 30-31. Fifty-six delegates and members were in attendance. Many who had intended to be present were not able to come, because of the severe storm prevalent the last week in January. The Secretary-Treasurer presented the following financial statement of the League:

Receipts

Balance on hand, Sec'y Chas. B. Justice	$ 48.16
Balance on hand from 1920	466.90
Receipts from state organizations since 1921 me.ting;	
Nebraska State Beekeepers' Ass'n	100.00
Colorado Honey Producers' Ass'n	325.00
Washington State Beekeepers' Ass'n	100.00
Kansas State Beekeepers' Ass'n	100.00
Texas Honey Producers' Ass'n	791.00
Texas State Beekeepers' Ass'n	50.00
Montana State Beekeepers' Ass'n	72.00
Wisconsin State Beekeepers' Ass'n	91,00
Iowa State Beekeepers' Tss'n	100.00
New York State Beekeepers' Ass'n	18.00
Oregon State Beekeepers' Ass'n	100.00
Illinois State Beekeepers' Ass'n	100.00
Receipts from allied trades:	
G. B. Lewis Co.	200.00
A. I. Root Co.	200.00
Dadant & Sons	200.00
Leahy Mfg. Co.	60.00
Falconer Mfg. Co.	50.00
Illinois Glass Co.	25.00
National Can Co.	25.00
W. W. Boyer & Co.	25.00
Hamilton & Menderson	25.00
Virginia Can Co.	25.00
A. G. Woodman Co.	10.00
Marshfield Mfg. Co.	10.00
Receipts from individuals:	
B. F. Smith, Jr.	20.00
E. B. Ault	20.00
H. E. Weisner	10.00
Wm. Glatter	10.00
L. D. Leonard	10.00
Mrs. Mary G. Alley	10.00
J. M. Davis	5.00
Bruce Anderson	2.00
Will M. Kellogg	1.50
W. E. Woodruff	1.00
W. P. Southworth	1.00
Miscellaneous receipts:	
Sale of warning posters	24.07
Feb. 1, 1921, to Jan. 31, 1922 Total General Fund	$3,431.63

Disbursements

Stenographer hire	$ 828.33
Postage	178.32
Printing, bulletins, stationery	372.70
Freight	4.12
P. O. box rent	9.00
Miscellaneous — telegrams, etc.	3.50
Total	$1,395.97
Balance in fund	2,035.66

The executive committee employed the secretary at a salary of $2,400 per year for 1921, which salary has not been paid.

As there was not a quorum present, it was the opinion of those present that the President should carry on the work of the League until a postal ballot for the election of new officers can be distributed and the proper returns made. The first duty of the newly elected officers will be to select a secretary and to establish a central office for the League during 1922.

The first report made was that of Mr. Frank Rauchfuss, of the Bureau of Statistics and Grades. Mr. Rauchfuss has been at work on the selection of a standard set of grades for honey during the past year and exhibited some thirty sets of standards collected throughout the United States. Papers on this subject by Arthur C. Miller and Dr. E. F. Phillips were read. The very fact that there are now more than thirty standards shows the need of one standard for the whole country. Because of the disagreement among those present upon standards, Mr. Rauchfuss was instructed to continue his investigation.

Dr. J. H. Merrill filed a report of the Bureau of Education. This gave, in full, the apicultural activities carried on in the State Agricultural Colleges and made recommendations for the advancement of this work He stated that, with the exception of 15, colleges of agricultural institutions in the United States have beekeeping courses. Seventeen states conduct

ITALIAN BEES AND QUEENS

COMB PACKAGES AND NUCLEI FOR 1922

Backed by years of experience in building our apiaries to a high standard by breeding from the best, we are prepared to furnish bees and queens that satisfy, and solicit your orders, guaranteeing safe arrival and satisfaction. Certificate of inspection accompanies each shipment. We have found from years of experience that bees shipped on comb invariably reach their destination in very best condition.

FULL WEIGHT PACKAGES **EXTRA STRONG NUCLEI**

Booking orders now for shipment May 1, 1922. Terms 20 per cent cash with order.

PRICES—	1 or more	12 or more	25 or more
2-lb. package with young Italian queen	$4.75	$4.40	$4.00
3-lb. package with young Italian queen	6.25	5.90	5.50
3-frame nuclei with young Italian queen	6.50	6.15	5.75

References:
First National Bank, Bainbridge, Ga.
Maddox Commission Co., Bainbridge, Ga.
Apalachicola State Bank, Apalachicola, Fla.

Members of
Florida State Beekeepers' Association.
Tupelo Honey Exchange,
Wewahitchka, Fla.

No Canadian orders solicited.

Apiaries, Ranletts Ldg., Fla. **M. L. NISBET & BRO.** **P. O. Bainbridge, Ga.**

extension work in beekeeping and nineteen experiment stations have projects in apiculture.

The Chairman of the Legal Aid Bureau, Mr. O. L. Hershiser,. sent in a complete report and review of the cases handled. Many attempts have been made to pass city or village ordinances against beekeepers, which were frustrated by the aid of the committee. This committee also was instrumental in having the warning notices printed by the League and sold to members to display in their apiaries. Ten cases were reviewed, in which legal assistance and advice was given to members of the League. The committee made a strong recommendation that a new book on the legal rights of beekeepers be compiled and printed by the League. (See page 126, March American Bee Journal.)

Beekeepers are asked to mail donations to the League for this purpose. The total cost of the publication is estimated to be about $600.

The Bureau of Arbitration, through H. B. Parks, chairman, filed a report showing that this committee handled about 150 cases of disputes among beekeepers. Nearly all of which were settled to the satisfaction of all concerned, without legal conflict. It was expressed by those present that if the League had accomplished nothing else, the work done in this department would well repay the effort put forth in the League movement.

At the suggestion of many of those present the value of a Bureau of Transportation was discussed. The incoming President was instructed to appoint such a committee, with power to investigate the claims of the League members and to present such findings to rate-making bodies.

Dr. E. F. Phillips, Chairman of the Bureau of Research, reported the activities of that body for the past year. A review of the investigation in beekeeping being conducted in the various national institutions and Experiment Stations was given. The committee made definite and specific recommendations to the League and called attention to the value of the establishment of the C. C. Miller Memorial Library to the future of beekeeping.

Colin P. Campbell, Chairman of the Bureau of Legislation, reported upon the securing of a tariff on honey. He stated that the committee was able to present the claims of the beekeepers to Mr. Fordney in such a way as to secure the recommendation of a 3c per pound tariff on honey. This part of the bill is now before Congress and favorably reported upon. The Senate Committee has reported their bill increasing this duty to 4c per pound. This committee is also considering federal regulations of interstate shipment of bees and used beekeeping appliances. A draft of the proposed law on this subject, prepared by Dr. S. B. Fracker, was presented to the meeting for its approval. Dr. E. F. Phillips presented a paper upon this subject and made suggestions to the committee concerning the danger of the introduction of the Isle of Wight disease into the country through the importation of queens. Dr. Phillips was requested to appoint a committee of three entomologists, who are also beekeepers, to act in conjunction with a similar committee appointed by the American Association of Economic Entomologists, to further investigate this matter and to take whatever action they deem necessary, in the name of the League.

The Committee on Advertising, C. F. Muth Chairman, reported upon the national advertising campaign and the distribution of the honey recipe book. The financial statement of this committee was as follows:

Receipts

From organizations:	
Michigan State Beekeepers' Ass'n	$ 192.72
Wisconsin State Beekeepers' Ass'n	100.00
Texas Honey Producers'	

MONEY SAVED **BEE SUPPLIES** TIME SAVED

Roots goods at factory prices with WEBER'S Service

Send us a list of your wants and we will quote prices that will save you money

C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.

FOR MAY DELIVERY

One vigorous Italian queen, one frame of emerging brood, one pound bees. Price complete, f. o. b. Bordelonville, $5.00. Additional frames or broods, each, $1.00; additional pounds bees each, $1.00. Queen introduced and laying enroute to you. Safe delivery and satisfaction guaranteed. No disease, reference given. Orders booked one-fifth down, May delivery.

Read what this customer says:

"Mr. Jes Dalton, Bordelonville, La. Enclosed is deposit on 2 packages for May delivery. The one package I got last spring increased to 14 colonies and gave me 85 pounds of comb honey. Respectfully, A. Russell Paul, Belvidere, N. J."

This shows what these balanced packages can do. And this:

"St. Thomas, Virgin Islands, U. S. A. Mr. Jes Dalton, Bordelonville, La. Dear Sir: The 2 packages arrived last night and upon examination I found about a dozen dead bees in one and about 200 in the other; quite a bit of sealed brood, some eggs and small larvæ. Very satisfactory considering the length of the shipment. Both queens had laid en route and there was plenty of honey in the combs. "Yours, Axel Holst."

This shipment went by rail via New Orleans and New York, thence by steamer via Porto Rico to the Virgin Islands; were in the case 28 days in August. How is this for delivery? If they survived this trip in good condition, they will go any place in the United States. Send for address of other satisfied customers. Complaints settled through the American Bee Journal.

Be sure to mention the American Bee Journal when writing.

JES DALTON, Bordelonville, La.

Ass'n	350.00
Utah State Beekeepers' Ass'n	300.00
From allied trades:	
A. I. Root Co.	1,000.00
F. W. Muth Co.	500.00
C. H. W. Weber	500.00
G. B. Lewis Co.	400.00
Dadant & Sons	300.00
Falconer Mfg. Co.	200.00
Foster Honey & Merc. Co.	100.00
Hazel Atlas Glass Co.	100.00
W. W. Boyer & Co.	100.00
Leahy Mfg. Co.	100.00
Miller Box Co.	100.00
U. S. Can Co.	50.00
From Individuals:	
F. J. Rettig	100.00
J. J. Wilder	50.00
S. F. Lawrence	10.00
Ernest Kohn	10.00
Colin P. Campbell	5.00
W. W. Foster	5.00
John Kneser	.36
From sale of booklets	31.00
	$4,604.08

Disbursements

Paid Proctor & Collier Co.	$4,166.77
Freight on booklets	25.85
Expressage on Advertising matter	21.54
Standard Printing Co.	8.00
Magazines distributed	5.00
Postage on booklets	147.47
	$4,374.63

Balance cash on hand	$ 229.45

Financial condition of Advertising Fund:

Assets

Cash on hand	$ 229.45
Unpaid pledge Foster Honey & Merc. Co.	50.00
Unpaid pledge Elyria Enameled Products Co.	200.00
Unpaid pledge C. H. Wiley	50.00
Unpaid pledge Georgia Beekeepers' Ass'n	100.00
Unpaid pledge Michigan keepers' Ass'n	7.28
Unpaid pledge Utah Beekeepers' Ass'n	200.00
Total assets	$ 836.73

Liabilities

Due Proctor & Collier ----- $684.77

The report of the committee showed that an enormous number of inquiries had been received as a result of an advertisement appearing in the "Good Housekeeping" magazine and other publications, and that the honey book had, as a result, received a wide distribution. A great deal of extra advertising was given through notices of the League movement which continue to appear in trade and advertising journals. It is astonishing what a profound impression so small an investment in advertising has created on the honey market. The meeting went on record as endorsing the work done and urged its continuance and expansion. To this end plans were considered for financing the work in the future. The same committee will be asked to continue the administration of the funds and the placing of advertising. The advertising fund is kept separate from the general expense fund of the League and money contributed to it cannot be used for any other purpose. The following plans were devised for the financing of advertising:

First: An appeal is to be made to supply manufacturers, dealers, honey bottlers and manufacturers of containers to renew the pledges of last year and to make new pledges and contribute to this fund.

Second: Beekeepers everywhere are solicited to send in at least one cent per colony owned for this fund. Every beekeeper in America will be expected to contribute. In states where honey producers' associations exist the members are to be asked to contribute a tax of 2c per colony. One cent to be used in advertising within the State and one cent to be used by the League for national advertising.

Third: A label or seal is to be adopted by the League and producers or sellers of honey who are members of the League have the privilege of affixing this seal on their containers. This seal will be sold to such parties at a small cost and will enable the

BURLESON'S OLD RELIABLE THREE-BANDED ITALIAN QUEENS

NONE BETTER

Not as cheap as some, but worth the difference. I guaranteed them to be absolutely free from brood diseases.

These are my 1922 Prices:

Untested ----$1.25 each, $13.50 per doz., 25 or more $1.00 each
Select Untest.--$1.50 each, $15.00 per doz., 25 or more, $1.15 each
Select Tested----------$3.00 each

Considering the high quality of my queens, combined with service and reliability, justifies the above prices.

SEND ALL ORDERS, TOGETHER WITH REMITTANCE, TO

J. W. SEAY, Mgr., Mathis, Texas

T. W. BURLESON, Waxahachie, Texas.

MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

We pay highest cash and trade prices for beeswax

LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri

J. W. ROUSE, Mexico, Missouri A. M. HUNT, Goldthwaite, Texas

sellers to connect up their honey with the national advertising campaign. The funds thus raised will be expended in advertising honey bearing the League label. The President was authorized to obtain a complete report of Mr. C. W. Aeppler, the chairman of the committee having the preparation of the seal in hand, with the Executive Committee to select the seal.

H. L. McMurry, Chairman of the Committee on Tree Planting, reported the progress of the work done by this committee and asked the co-operation of all interested in this work to co-operate with him in securing information relative to trees which are adapted for roadside planting in various localities of the United States. These trees must be long-lived, ornamental and of use to the bees.

The practice of spraying roadsides and vacant lots with poisons to kill weeds was discussed and the matter referred to the Legal Aid Bureau for investigation.

H. F. Wilson, Chairman of the Schedule Committee, reported that his committee had been able to arrange a schedule for many of the meetings held the winter of 1921 and 1922, and had already arranged a larger schedule for the summer meetings. Mr. Wilson's work received the most hearty commendation of the meeting.

Dr. L. D. Leonard, Chairman of the Committee on Inter-society Co-operation, reported that such co-operation was possible with the American Association of Economic Entomologists, the Farm Bureau Federation and the National Horticultural Society. The committee was urged to make further investigation as to objects of co-operation.

C. B. Baxter, of the Bureau of Standardization of Equipment, made a general report upon the need of standards. This subject was thoroughly discussed and it was pointed out that if fewer standards were adopted the manufacturers could supply bee fixtures and containers at a lesser price than at present. Representatives of the can and glass manufacturers have emphasized this statement. The committee was ordered to continue its work and to make recommendations as soon as possible.

The meeting went on record as being in favor of amending the constitution of the League so as to permit small state and regional associations having fewer than 100 members to affiliate with the League upon payment of $1 per member. The President was ordered to take a mail ballot on the following amendment:

That the words "Provided that the minimum fee for membership from any organization shall be $100," be stricken from Section 2 of Article II of the constitution of the American Honey Producers' League.

The President having served for two years, asked that he be relieved and that a successor be selected. The term of office of B. F. Kindig, Vice President, and F. B. Paddock of the Executive Committee, having expired, a ballot was ordered taken by mail among the League membership to choose these three officers. Both these ballots have been mailed and the result will be announced as soon as received and tabulated.

A banquet was held at the Hotel Utah at 8 p. m. on January 31. Many inspiring and optimistic speeches were made and much enthusiasm for the future of the League was shown. After recommending to the Executive Committee that St. Louis be chosen for the 1923 meeting of the League, the third annual session adjourned sine die.

Sealing of Parcel Post Packages

Under a recent ruling of thePost-office Department, parcel post shipments may be sealed, providing a printed label is attached giving permission to open the package if necessary, and containing a general description of the material enclosed.

Contents: Extracted Honey.

Postmaster—This parcel may be opened for postal inspection if necessary.

John Doe & Co., Smithville, N. Y.

This ruling will enable the beekeeper to use the parcel post more extensively and more economically than in the past, by adopting more efficient styles of boxes and packing and more efficient methods of sealing.

LOOK BEFORE YOU LEAP

Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

1922 CATALOG, illustrated now ready.
MONDENG'S Bee Supplies speaks for itself

CHAS. MONDENG

146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.

BEE SUPPLIES

Send us your orders for your 1922 requirements NOW.
We guarantee our goods t obe first-class in workmanship and material.

Special Prices on Tin Honey Containers

5-lb. pails, per 50	$3.75
5-lb. pails, per 100	7.00
10-lb. pails, per 50	5.50
10-lb. pails, per 100	10.50
60-lb. square cans, per case of two	1.25

Offered for shipment in original packages only, either from Reedsville, Wis., or direct from can factory.

No. 2 Section Honey Boxes

50,000 4¼x4¼x1½, plain	$ 8.50 per 1,000
25,000 4¼x4¼x1¾, beeway	10.00 per 1,000

We carry a complete line of everything for the beekeeper. Write for our new catalog.

A. H. RUSCH & SON CO.
REEDSVILLE, WIS.

WHY ARE LEWIS SECTIONS BEST?

¶ Back in 1881 when James Forncrook invented the 1-piece section honey box in Watertown, Lewis designed the machinery which others have been trying to equal ever since.

¶ Using Wisconsin basswood which cannot be equalled, Lewis has kept pace with progress in developing methods for making perfect sections. No others equal "Beeware."

¶ Here are shown dovetailing, cutting B-way, V-grooving, final inspection, testing and packing. There are no spurts of good section making here. They must all be perfect.

¶ Every Lewis section is always sold under an absolute guarantee of your satisfaction or all money and transportation charges repaid. Ask your banker if this guarantee is good.

¶ Produce more section honey during 1922.

BEE HIVES AND APIARIAN EQUIPMENT
BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. U.S.A.
MAKES THE FINEST.
COPYRIGHT, 1916, BY G.B.LEWIS COMPANY

G. B. LEWIS COMPANY

HOME OFFICE AND WORKS
WATERTOWN, WIS., U. S. A.
Distributors Throughout the U. S. A.
BRANCHES: MEMPHIS, ALBANY, LYNCHBURG, WICHITA, DENVER, FROMBERG

THREE

BANDED

I PAY THE TRANSPORTATION CHARGES ON PACKAGE BEES

1-pound package, including young three-banded queen..... $4.50
2-pound package, including young three-banded queen..... 6.00
3-pound package, including young three-banded queen..... 7.50
25 cents per package less for twelve or more packages.
Delivered to your address via parcel post.

In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

Select untested queens, $1.50; six, $8.00; twelve, $15.00

Safe arrival of bees and queens, pure mating, and satisfaction guaranteed. Let me book your order with ten per cent cash, balance just before shipping. Shipment will be made on the day you name. I have not yet disappointed a customer. No disease.

JASPER KNIGHT, Hayneville, Ala.

BEES

Write us number of packages or nuclei you may be in need of. We will be glad to give you our best prices; also amount of express. We believe we are so located that we can make you a substantial saving.

R. V. STEARNS, Brady, Texas.

QUEENS

that spell s-a-t-i-s-f-a-c-t-i-o-n, at prices pronounced r-e-a-s-o-n-a-b-l-e, our aim and achievement.

Prices of Queens for 1922:

	1	6	12
Untested ____	$1.50	$ 8.00	$14.00
Select untested	1.75	9.00	16.00
Select tested_	3.00	16.00	30.00

HARDIN S. FOSTER, Columbia, Tenn.

WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 1922 price list. Our quotations will interest you.

The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

SANCO

BEEKEEPERS' SUPPLIES
Write for catalog. Write for Dealers' Proposition.

SANCO BEE COMPANY
Manufacturers,
E. Main St. Fredericksburg, Ohio.

1922 ITALIAN QUEENS

Untested $1.20 ea , 12 or more $1.00 ea.
Select Untested $1.50, Tested $2.00

PACKAGE BEES PRICED ON REQUEST
No Disease

D. W. HOWELL, Shellman, Ga. Box B5

QUEENS

Write for our catalog of high-grade Italian Queens. Pure mating and safe arrival guaranteed.

Price List
Before Aug. 1.
1 to 4, inclusive.. $2.50 each
5 to 9, inclusive.. $2.45 each
10 or more ..... $2.40 each
After Aug. 1:
1 to 4, inclusive.. $2.00 each
5 to 9, inclusive.. $1.95 each
10 or more ..... $1.90 each
Breeding queen, whole season, $10.00 each

JAY SMITH, Route 3

VINCENNES, IND.

GOLDEN QUEENS—1922

Untested, $1.25 each, or $12 per dozen. Tested queen, $2. One 2-lb. package with untested queen, delivered, $6.50. One 2-frame nuclei, with untested queen, delivered, $6.50. Satisfaction guaranteed and shipments after April 15.

R. O. COX, Box 25, Rutledge, Ala.

Annual White Sweet Clover Seed

(James or Alabama Strain)

Start right. Buy your seed from the home of this New Plant.

This clover was discovered growing in Alabama by our Mr. James, in 1919.

Our crop this year was harvested without rain, and we can furnish a very high grade of seed, absolutely pure, grown by us on cultivated lands.

We are offering a limited supply at $1 per pound, delivered. This will be clean, hulled, scarified seed. Germination test must please you. Write for further information as to how to grow, etc.

F. A. James Clover Seed Co
Newbern, Alabama

Carefully Selected. **YES** **Extremely Prolific.**

SOUTHLAND QUEENS

—are bred—

from Root Home-Bred Breeders; selected; marked by over 50 years' experience in breeding the best. Most **Prolific** queens of today.

Bred by Expert Northern Breeder

We positively guarantee Southland Queens to be purely mated, to be mated, no virgins or drone layers, to be bred from as fine breeding stock as in the world of beedom, to be hardy, prolific and disease-resisting, **to give you absolute satisfaction, or your money refunded.**

Specify Southland Queens.

THE SOUTHLAND APIARIES
Box 585. Hattiesburg, Miss

QUEENS

Our Old Reliable Three-banded Italians are Honey Getters. They are gentle, prolific and very resistant to foulbrood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free. Prices April 1 to July 1:

Untested, $1.25; over 25, $1 each.
Sel. Unt., $1.50; over 25, $1.25 each.
Tested, $2.50; over 25, $2.25 each.
Select tested, $3 each.

See our ad in January Journal.

JOHN G. MILLER
723 C St., Corpus Christi, Texas.

ROOT QUALITY QUEENS AND BEES

Something About Them

Fifty years of continuous breeding up to the present Root Quality Queens and Bees. A. I. Root bought the first mother of this strain from Langstroth 55 years ago. No expense or pains has ever been spared to develop this strain of improved 3-banded, leather-colored Italians.

THE A. I. ROOT COMPANY
Medina, Ohio

April 15 to June 30

		1 to 9 Queens.	10 to 24 Queens.	25 to 49 Queens.	50 to 99 Queens.	100 Queens or more.
C-312000	Untested	$2.00 ea.	$1.80 ea.	$1.70 ea.	$1.60 ea.	$1.50 ea.
C-313000	Select Untested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
C-314000	Tested	3.00 ea.	2.70 ea.	2.55 ea.	2.49 ea.	2.25 ea.
C-315000	Select Tested	3.50 ea.	3.15 ea.	3.00 ea.	2.80 ea.	2.60 ea.

July 1 to November 1.

		1 to 9 Queens.	10 to 24 Queens.	25 to 49 Queens.	50 to 99 Queens.	100 Queens or more.
C-312000	Untested	$1.50 ea.	$1.40 ea.	$1.35 ea.	$1.25 ea.	$1.15 ea.
C-313000	Select Untested	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
C-314000	Tested	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
C-315000	Select Tested	3.00 ea.	2.85 ea.	2.70 ea.	2.55 ea.	2.40 ea.

Bees by the Pound—April 15 to September 1

C-310700 ..... 1-lb. pkg., $3.00; 25 or more, $2.85 each
C-310800 ..... 2-lb. pkg., $5.00; 25 or more, $4.75 each
C-310801 ..... 3-lb. pkg., $7.00; 25 or more, $6.60 each

(These prices are f. o. b. shipping point. Shipped by express. Add price of queen wanted to package price given above. Early deliveries will be made from our Alabama apiaries.)

NUCLEI OUR SPECIALTY—PACKAGE BEES

THREE BANDED ITALIAN QUEENS

Our BEES and our EXPERIENCE will give you prompt and satisfactory service.

One 2-frame nuclei, no queen, $4; 25 or more, $3.75; 50 or more $3.50; 100 or more, $3.25.

One 3-frame nuclei, no queen, $6; 25 or more, $5.25; 50 or more $5; 100 or more, $4.75.

Queens: One untested, $1.50; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.

Package bees, same prices as nuclei. Write for early order discounts from above prices and our guarantee on shipments. We will surprise you.

COTTON BELT APIARIES, Roxton, Texas

BEEKEEPERS

We urge you to place your orders for Bee Supplies now, and be prepared for the honey flow. We offer a complete line of Bee Supplies and we are positive that our prices will interest you. We make a specialty of manufacturing supplies for comb honey production and will appreciate the opportunity of quoting you our special prices on quantities.

Send us your name and address and we will send you a copy of our new illustrated catalog free.

AUGUST LOTZ COMPANY, Boyd, Wisconsin

PRICES OF QUEENS

	Nov. 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12
Untested	$2.00	$ 9.00	$17.00	$1 50	$ 8.00	$14.50
Select Untested	2.25	10.50	18.00	2.00	9.50	16.00
Testee	3.00	16.50	30.00	2.50	12.00	22.00
Select Tested	3.50	19.50	36.00	3.00	16.50	30.00

BREEDERS $12.50 TO $25.00

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

NO NUCLEI, FULL COLONIES OR POUND PACKAGES

BEN G. DAVIS, Spring Hill, Tenn.

HUBAM CLOVER

THE HONEY BEES' FRIEND

Beekeepers are greatly interested in Hubam Clover because it produces the largest crop of splendid honey food. We have a select lot of certified, hardy Hubam Clover Seed, 25c an oz., $2.50 a lb.; when orders are placed for ten lbs. or more, $2.00 per lb. Order early. Supply limited.

KEITH BROS. NURSERY,
Box 715 Sawyer, Mich.

CLOVERLAND, Upper Peninsula of Michigan, has thousands of acres of clover-laden, low-priced lands waiting for bee farmers. Experts agree there is no region as favorably adapted to bee farming. Alsike, June, red-top and other clovers grow abundantly as volunteer crop. For detailed information write: **The Upper Peninsula Development Bureau, Marquette, Michigan.**

YOU DID NOT SMILE

When you tried, last summer, to introduce a $2.00 queen and lost her. But you will smile the next time you try, if you use Rexford's O. K. Push-in Comb Cage.

Bees become friendly with her, not only by running over the cage and coming in close contact with her, but also, after a day or so, they are allowed to go in with her, one at a time. They go in and out, and the queen and her attendants are introduced to the colony, while safe in the cage, where there is no fighting and no balling the queen. Also, if for any reason it is desirable to cage the queen for a few days or weeks, this cage is much better in every way than a small cage. Many times queens are more or less injured by being confined too long in a small cage. With a Push-in Comb Cage she is released at once onto the comb and often begins laying inside the cage.

Price 35c, 20 per cent off for 6 or more; 3 for $1.

O. S. REXFORD,
Winsted, Conn.

THE FAMOUS TEXAS QUEENS

The FAMOUS TEXAS QUEENS can now be had again at prices that are in the bounds of reason. No need of you paying high prices.

My Texas Queens are well known over the world.

Untested queens $1 each, $11 dozen. Tested queens $1.25 each, $14 dozen.

GRANT ANDERSON, Waco, Tex.
Route 2.

GOLDEN ITALIAN QUEENS

Untested, 1, $1.25; 6, $7. Safe arrival and satisfaction guaranteed. Will be ready for shipment April 1, 1922.

J. J. SANFORD & SON,
Rt. 1, McKenzie, Ala.

THREE BANDED ITALIAN QUEENS AND BEES

Raised in full colonies, mated in three-frame nuclei, which insures strong, vigorous queens bred especially for honey production, hardiness and gentleness. Tested in our own apiaries in Idaho and Montana.

For quantities or car load shipments write for prices. All standard Langstroth equipment.

Nuclei, with laying queen—	April	May	June
1 frame	$4.00	$3.50	$3.00
2 frame	5.50	5.00	4.50
3 frame	7.00	6.50	6.00
4 frame	8.50	8.00	7.50

1-lb. packages of bees, without queen $2.50
2-lb. packages of bees without queen 4.00
3-lb. packages of bees, without queen 5.75
Add $1.50 each if queen is wanted.

20 per cent with order, balance time of shipment. Our guarantee: Safe arrival, satisfaction, no disease

WEBER BROS. HONEY CO., Rialto, Cal.

NUCLEI FOR SALE—1922 PRICES

Remember that in buying our nuclei you are not only getting two pounds of bees, but three frames of brood, which, when hatched, will double the size of the colony.

Note what these large beekeepers say: "I have no hesitation in recommending you as to your ability to put up bees for shipment, or as to your business integrity. Of the 225 nuclei sent to date, every one came through alive and in fine condition."—R. F. Holtermann, Ontario, Canada.

"Nuclei arrived in fine shape; made 100 lbs. clover honey each. Book me for 100 next spring."—G. F. Saunders, Hornby, Ontario, Canada.

H. J. Eisaman, of East Springfield, Pa., states: "While visiting in Mr. R. F. Holtermann's part of the country this fall, I noted the splendid showing your bees had made. Book me for 30 nuclei for May 1."

PRICE LIST OF OUR GOODS

3-frame nuclei Italian bees with Italian queen ..... $5.50 each
3-frame nuclei hybrid bees, with guaranteed pure Ital. queen, $5 each
3-frame nuclei black bees, with black queen ..... $4.00 each
4-frame nuclei blac· bees (without queens), fine for building up weak colonies ..... $4.00 each
Cypress hives, complete, crate of 5 ..... $12.00
Medium brood foundation at 65c per pound.

Terms: One-fourth down to guarantee acceptance. Safe arrival and satisfaction guaranteed. Certificate of inspection will accompany each shipment. Will start shipping April 10, 1922.

A. R. IRISH, Ludowici, Ga.

ANNUAL WHITE SWEET CLOVER SEED FOR SALE

Fifteen years ago M. C. Berry discovered this wonderful plant growing on the "old Gilmer plantation," near Tyson, Ala. Since then we have watched with interest its great spread and growth throughout this state. As a plow-under green manure crop it has no superior, and for honey it has no equal. In gathering this seed, through a misunderstanding, we had a lot that was mixed with biennial. Therefore our loss is your gain, as we are selling this seed hulled and scarified at the following unheard-of low prices, as long as it lasts:

In 5 or 10-pound lots, by parcel post, prepaid, 30c a pound.
In 25 to 50-pound lots, by express, prepaid, 25c a pound.
In 50 to 100-pound lots, by express, prepaid, 20c a pound.

Seed is guaranteed to be pure sweet clover running from 50 to 90 per cent pure Annual, the balance Biennial Germination we also guarantee to fully satisfy.

M. C. BERRY & CO., Montgomery, Alabama Box 697

"A TIP WORTH WHILE"

Write us for quotations on your season's requirements.

We would like to have an opportunity to prove what Root's Quality and Service mean to beekeepers.

Our new 64-page bee supply catalog will be mailed on request.

THE A. I. ROOT COMPANY, St. Paul, Minn.

3-BAND QUEENS

That have reached the peak of Perfection

Untested..... $1.25; $13.50 dozen
Select untested.. $1.50; $16.20 dozen

Just send for our free circular and complete price list. It tells all about them. Pure mating, satisfaction and safe arrival guaranted in U. S. A. Health certificate with each shipment. Only a thousand of these **GOOD** Queens a month, is our capacity.

HERMAN McCONNELL,
Robinson, Illinois.

BEES-QUEENS From Georgia

Queens—Untested $1.00; Tested, $1.50. Bees—1 lb. $2; 2 lb. $4; 3 lb. $6. Nuclei—1 fr. $3; 2 fr. $4; 3 fr. $6

Discounts on quantity orders. Your sarisfaction guaranteed. Send us a list of your supply needs

MICHIGAN HONEY PRODUCERS EXCHANGE, Inc.
5495 Grand River Ave., Detroit, Mich.

KUNKEL HONEY EXTRACTORS

The latest and most complete line of honey extractors made, hand and power machines. Write for descriptive catalog

KUNKEL MANUFACTURING CO.
781 S. San Pedro St., Los Angles, Cal.

SUPERIOR FOUNDATION

"BEST BY TEST"

Do not fail to secure our 1922 reduced prices on SUPERIOR FOUNDATION. State quantity desired. We also manufacture Hoffman frames, dovetailed beehives, etc. Quality unexcelled. Prices on request.

SUPERIOR HONEY CO., Ogden, Utah
(Manufacturers of Weed Process Foundation).

BEEKEEPERS WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.

PACKAGE BEES FOR 1922

We Specialize on Three-band Italians Bred for Business.

A 2-pound package of our hustlers with a select untested queen for $5; 25 or more, $4.75 each. Special prices on large lots. One-fifth cash books your order. Order early and make sure of shipping date. We do not accept more orders than we can fill promptly.

CANEY VALLEY APIARIES, Bay City, Texas
J. D. YANCEY, Mgr.

CHESHIRE'S "BEES AND BEEKEEPING," in two volumes, has recently been reprinted. We offer it to our subscribers at $6 for the two volumes, postpaid.
AMERICAN BEE JOURNAL, Hamilton, Ill.

A NEW BEE BOOK
"Dadant's System of Beekeeping"
Send for a copy today.
Price $1.00.

TYPEWRITER SENSATION

$4 or $5 a month WILL BUY
A Standard, Guaranteed TYPEWRITER With Every Modern Writing Convenience
Write Today For Illustrated Circular Explaining Try-Before-You-Buy Plan
SMITH TYPEWRITER SALES CO
(Harry A. Smith 314—218 No. Wells St., Chicago, Ill.

QUEENS
THREE-BAND ITALIANS

PACKAGE BEES

QUEENS
SILVER GRAY CARNIOLANS

Western headquarters for PACKAGE BEES and QUEENS. Orders booked with 25 per cent deposit, balance just before shipping. Deliveries start April 1. Safe arrival guaranteed of bees within 5 days of shipping point, queens anywhere in U. S. A. or Canada. Free circular for the asking.

1-pound package	$2.00 ea.	10 or more $1.75 ea.	1 untested queen	1.25 ea.	10 or more 1.20 ea.
2-pound package	3.50 ea.	10 or more 3.00 ea.	1 select untested	1.50 ea.	10 or more 1.40 ea.
3-pound package	5.00 ea.	10 or more 4.50 ea.	1 tested	2.00 ea.	10 or more 1.80 ea.
			1 select tested	2.25 ea.	10 or more 2.00 ea.

References by permission: First National Bank of San Jose; Security State Bank, San Jose American Bee Journal, Hamilton, Ill.; Western Honey Bee, Los Angeles.

Write for prices in large lots. Breeders, extra selected and tested for breeding, $5.00

J. E. WING 155 Schiele Ave. **SAN JOSE, CALIF.**

QUEENS

BEES BY THE POUND FOR 1922

TWENTY-SIX YEARS OF SELECT BREEDING

QUEENS

Gives us bees and queens of unsurpassed honey gathering and disease-resisting qualities. Our thousands of satisfied customers testify to this. We are now booking orders for 1922 delivery, 10 per cent cash with order. No disease, safe arrival and satisfaction guaranteed. Bees shipped on the dot, as we are taking only as many orders as we can fill and do so promptly. Our prices are low considering quality of our strain. Write for our free circular and price list.

"Enclosed find $75 for 50 queens. I want these for requeening European foulbrood colonies, as I find your strain resistant. One of your queens built up from a nucleus and made a surplus of 360 pounds of honey." Name and address on request.

M. C. BERRY & CO., Montgomery, Alabama Box 697 **U. S. A.**
(FORMERLY HAYNEVILLE, ALA.)

SUPERIOR ITALIAN BEES AND QUEENS

Let us quote you on your requirements in Queens, Package Bees or Nuclei. Over 2,000 colonies to draw from.

CYPRESS BEE SUPPLIES

Dovetailed Hives, Hoffman Frames, Cypress Bottoms, Reversible Covers, Shallow Supers..

Let us quote you.

Special Offer, in 8-frame only: Best wood covers made, at only 50 cents each, while they last.

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

Bee Wants Will Bee Supplied by Using

SOUTHLAND LIGHTNING SERVICE

Greatest Production by Using

ROOT GOODS

We ship from factory or branch nearest you to save you freight. Wholesale discounts. Write for our catalog and **Special Prices**

Prompt Service and Satisfaction Guaranteed

Hubam Certified Clover Seed $2.00 per lb., 25 pounds $1.60 per lb.

Box 585 THE SOUTHLAND APIARIES, Hattiesburg, Miss.

BACK TO PRE-WAR DAYS

THAGARD ITALIAN QUEENS BRED FOR QUALITY

In reducing our prices to pre-war days we realize that you are receiving pre-war prices for your honey, and cannot afford to pay war prices for your queens.

Although we have reduced our prices, we are going to give you the same high quality queens, queens that have pleased thousands of beekeepers in the past, and queens that will please you. Test some of them out. If after giving them a fair chance you are not satisfied with the results, we will return your money or give you another queen. Our leather colored, 3-bands will stand the test. Catalog free.

Untested, 1 to 12, $1 each; 12 to 49, 95c each; 49 to 99, 85c each; 100 or over, 80c each.

If you want untested queens, bred from any special breeder we have, the price will be:

I to 5, each $1.50; 5 to 12, each $1.10; 12 to 50, each $1..

Italian bees with Italian queen: 1-lb. package, $3; 2-lb. package, $5.

THE V. R. THAGARD CO., Greenville, Ala.

ITALIAN QUEENS AND BEES

When you want quality, disease-resisting, and honey gatherers, why not Root's strain that has been tested out for over 50 years. I am prepared to take care of your wants. Small or large orders will receive my prompt attention. Quality, service and satisfaction is my motto. Remember, you get what you order, with a guarantee backed by years of experience.

Prices to July 1.

	1	12	100
Untested queens	$1.25	$13.80	$90.00
Select untested	$1.60		
Tested	$2.00		
Select tested	$2.40		

After July 1, 10 per cent discount. Write for circular.

A. J. PINARD, 440 N. Sixth street, San Jose, Cal.

ACHORD'S ITALIANS ARE GOOD BEES

Whether you have only a few colonies or five hundred, we believe you will like them, and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain, bred primarily for honey-production, but also for gentleness and color. We have spared neither labor nor expense to make them the very best. We begin shipping about April 15.

Price of Packages, April and May, F. O. B. Shipping Point, by Express

1-lb. pkg. $2.25; 25 or more, $2.15; 50 or more $2.00
2-lb. pkg. $3.75; 25 or more, $3.50; 50 or more, $3.35
3-lb. pkg. $5.25; 25 or more, $5.00; 50 or more, $4.85
Add price of queen wanted to package price above.

Price of Queens, April and May

Untested, each $1.25; 10 or more, $1.15; 25 or more, $1.00
Select untested, each $1.35; 10 or more, $1.25; 25 or more, $1.15
Tested, each $2.00; 10 or more, $1.75.
Safe arrival and satisgaction guaranteed.

W. D. ACHORD, FITZPATRICK, ALA.

QUEENS — EARLY ORDER DISCOUNTS FOR 1922 ON QUEENS AND PACKAGE BEES — QUEENS

Orders received during March, 1922 2%
One fourth cash with order, balance before shipment.

QUEENS

1 untested Queen $1.25, 25 or more $1.00
1 tested Queen $2.50, 25 or more 2.25
1 select tested Queen, $3.00, 25 or more 2.50

NUCLEI

Two-comb regular Nuclei $3.60
Twenty-five or more 3.45

PACKAGES

One 2-lb. package, $3.60; 25 or more $3.45
One 3-lb. package, $5.00, 25 or more 4.75
Add price of queens wanted when ordering above packages.

PATTERSON & WINTERS, Jourdanton, Tex. References: Adams Nat. Bank, Devine, Tex.; Atacosa State Bank, Jourdanton, Tex.

A TRAGEDY

We are Forehand's three-band Italian queens and bees. A product of twenty-eight years of our master's skill. We have thriftiness, vigor, gentleness and beauty. We have plenty of neighbors, for our master has hundreds of colonies of our kind, and a thousand nuclei. We would be happy, but master sends off our best friends and our young bees by the thousands of pounds. We make him hives full of honey, but he is never satisfied, always working to make us better. We are anxious to keep our family, and we would like to see the world. Just try us. We will increase your profits.

3-band Italian queens by return mail; bees by April 15.

Untested queen, ------$1.50; 6 for $7.50; 12 for $13.
Select untested ------$1.75; 6 for $9.00; 12 for $16.
1-lb. Italian bees with untested queen ---------$3.00
2-lbs. Italian bees with untested queen --------$5.50
10 2-lbs. Italian bees with untested queen--$5.00 each

N. FOREHAND, Ramer, Ala.

Surpassed by None

HIGHEST QUALITY PROMPT SERVICE GUARANTEED SATISFACTION

Superior to Many

MR. BEEKEEPER

I positively guarantee that you cannot buy better bees and queens than these. A trial order will convince you. Backed by 15 years' experience. Bees will be shipped the day you name. Satisfaction, safe delivery positively guaranteed. When you buy bees and queens from me you take no risk. On arrival of queens put them in your colonies. In a few weeks note what kind she is, and if you don't like the looks of her, send her back to me and get your money or another queen, whichever you desire. Is it fair?

Our Prices:	1	6	12	100
Untested --------	$1.25	$7.00	$12.50	$90.00
Select untested---	1.50	7.50	13.50	95.00
Tested ----------	2.50			

POUND PACKAGES WITH SELECT UNTESTED QUEENS

1-lb. packages, 1 to 12, $3.75 each; 12 or more, $3.50 each.
2-lb. packages, 1 to 12, $5.00 each; 12 or more, $4.75 each.

THE FARMER APIARIES, Ramer, Alabama

Aluminum Honeycombs are no Longer an Experiment they are a Necessity in every Apiary

Texas made aluminum honeycombs give you the results

You can get them from your local dealer

They are standard Hoffman-Langstroth in size and spacing

They have bronze steel wire stays that hold the comb firmly in place

They have the channeled in end bars that make the comb as rigid as a natural wax comb

They have the hive odor as pure beeswax is the coating used

They are as near natural combs as can be made

When buying insist on Texas made aluminum honeycombs made by the Aluminum Honeycomb Co. of Texas, San Antonio, Tex.

If you have not tried them write for our price list

THE ALUMINUM HONEYCOMB COMPANY OF TEXAS

SAN ANTONIO, TEXAS

Crop and Market Report

Compiled by M. G. Dadant.

For our April Crop and Market Report we asked our reporters the following questions: 1. What is the per cent of winter loss in your section? 2. What is the condition of bees as to strength and amount of stores, compared to same time last year? 3. What is the condition of honey plants? What are prospects compared to a year ago? 4. How is honey moving? How much left on hand? 5. What are the prices on comb and extracted, jobbing?

PERCENTAGE OF LOSS

Although it is a little early to get any idea of the percentage of loss in the northern half of the country, this question was asked that it might bring out what losses there had been in outdoor wintering. In the New England States the bees seem to be wintering very well, with light losses, and this seems to be true of all of the northeastern States as well.

Tennessee has had a small loss and Kentucky reports perfect wintering. Georgia has also had small losses, but Florida seems to have experienced considerable loss, most probably through lack of stores. The loss in Mississippi and Texas and Louisiana does not seem to exceed five per cent, and will likely run more nearly two or three per cent.

In Ohio, Indiana, Illinois, Iowa and Missouri the loss is small, not running over two to six per cent, so far, although one Ohio reporter claims 40 per cent loss. In the Northern States of Michigan, Wisconsin and Minnesota it is yet too early to ascertain, definitely, the amount of loss, as is the case in the states to the west. However, Kansas reports an average loss of about 5 per cent and South Dakota in the neighborhood of 10 to 15 per cent.

It seems that the losses in Montana and Idaho will be considerably larger than last year, the largest reporting about 15 per cent and others from 5 to 15 per cent, owing to the extremely cold weather. Colorado loss will be nominal, in the neighborhood of from 2 to 5 per cent. New Mexico reports rather a large loss, ranging as high as 20 per cent, whereas, in Arizona, the loss seems to be about 1 to 5 per cent. Winter loss in Utah will be light, as it will be in Nevada. Washington and Oregon report about a 5 per cent loss, while California runs from 4 to 12 per cent, with the largest loss in the interior.

CONDITION OF BEES AND STORES

In New England and the Northwestern States conditions seem to be about normal. One or two reports state that the bees are weak, but that there are plenty of stores. In the Southeastern States reports are to the effect that bees are considerably above normal, with plenty of stores to carry them through. Texas reports light stores in some instances, but the bees in excellent shape.

Throughout the whole of the rest of the country bees seem to be in about average condition for this time of the year, although very few examinations have been made to get at their specific condition. Here in Illinois what bees we have examined are in excellent condition, losses are very light and stores seem to be sufficient to carry them over for the critical period of the next month.

CONDITION OF HONEY PLANTS

In the Northeastern States honey plants hardly seem to be as good as last year, but New York, Pennsylvania and some of the Northern States, like Michigan, Wisconsin and Ohio, expect to have the plants come out in very good condition, owing to the fact that the ground is deeply covered with snow. A little farther south there seems to have been very little snow and the ground was bare for a good share of the winter, which is not conducive to the best prospects for clover.

Florida and Georgia, as well as Mississippi, expect to have very much better honey yields this year than last, owing to the excellent shape in which the honey plants are coming out of the winter. They have had good rains and all of the plants seem to be in extra fine condition.

In Texas conditions seem to be spotted. Southern and south central Texas are above normal, whereas northern Texas and western Texas seem to have been too dry, and honey plants are not in as good condition as might be desired, in fact they are considerably below normal in these latter sections.

Arkansas and the south half of Missouri have had copious rains, whereas the northern half, as well as southern Illinois, southern Iowa, and parts of Indiana have been bare of snow all winter, and prospects are not overly good for clover, although they should range at least as good as last year.

Snows have been heavy in the western and northwestern section of the country, and, of course, this is conducive to the very best condition of honey plants in the spring.

In California the prospects are exceedingly good. In some cases the reporters claim that they are 300 per cent as good as last last year, which would show that the copious rains they have had out there more than overbalanced any disadvantage from the hard frost which killed many of the orange trees. Southern California is looking for a record crop and it is to be hoped that they will not be disappointed.

HONEY SALES AND HONEY PRICES

Throughout practically all of the country reports are exceedingly good as to the movement of honey. Although honey is moving very slowly now, practically all of the honey in the hands of producers seems to have been cleaned up, except in the States of Montana, Idaho, Colorado, Washington and California.

Montana, unfortunately, reports at least half of their honey left on hand, most of which is comb. One Idaho reporter states that he has three-fourths of his honey left, and several of the others claim almost half of the honey still on hand. Colorado has several cars of honey still to be disposed of, most of which is comb, although there are a few cars of extracted. Utah has very little honey left on hand. California has disposed of practically all of the honey left in the hands of the Exchange, and there are now only a few beekeepers who have part of their 1921 crop to dispose of. It seems, however, that large quantities were disposed of some time ago, which has tended to depress the market in that section, and probably had its effect all over the country.

HONEY PRICES

There seems to have been no inclination on the part of the individual producer who was selling his own crop to cut prices to move the last of the crop. In fact, prices seem to have held very well up to the standard set in the earlier part of the season.

As to prices on the large lots still moving, Montana producers would be glad to sell their comb honey at a price of about $4 per case, with a price of 8½ cents for extracted. This seems to be the general price which might be accepted by producers for all honey left on hand in the western sections.

THE GOVERNMENT

We would call our readers' attention most especially to the Crop and Market Report sent out semi-monthly by the Bureau of Markets at Washington, D. C. We would urge strongly upon every reader to request to be placed upon the mailing list of this Department for their honey report, which is issued on the first and 15th of the month.

Their March 1 report, for instance, gives the imports into and the exports from the United States by countries for the calendar year 1921. This shows that 70,000 pounds more were imported than exported and would seem to indicate that we are practically at a balance of trade in this respect.

Will have Golden Italian Queens for delivery after May 25, untested $1.50 each; 12, $14.50; tested, $3; after July 15 untested $1.25.

T. J. TALBOTT & BRO.
409 Marx St., South Richmond, Va.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue: If intended for classified department it should be so stated when advertisement is sent.

BEES AND QUEENS

YOUR CUSTOMERS will like Atwater Honey.

TRY my Caucasian or Italian 3-frame nuclei at $6 each, with tested queens, next spring delivery. Tested queens, $1.50; untested, $1.25 each. No disease.
Peter Schaffhauser, Havelock, N. C.

MAY DELIVERY, 1, 2 and 3-pound packages, $3, $4 and $5; nuclei, $3, $4.25 and $5.50, with select untested 3-band queens. Special orders solicited. Selected untested 3-band queens, $1.25; 6 or more, $1 each. Select tested, $2.50 to $5. 20 per cent books order. State health certificate. Satisfaction and safe arrival guaranteed. Address our Appalachicola, Florida office.
Tupelo Honey Co., Columbia, Ala.

CONNECTICUT QUEENS—Highest grade 3-banded Italians, ready June 1. Select untested, $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease, and satisfaction guaranteed.
A. E. Crandall, Berlin, Conn.

BEES AND QUEENS at reduced prices. Two-pound packages bees with untested queens, $3.65; 3-pound packages bees with untested queens, $4.55; 2-frame nuclei with untested queens, $3.80; 3-frame nuclei with untested queens, $4.70, in lots of 100 or more. For small lots add 10 per cent. Reference: Security Bank and Trust Co., Wharton, Texas.
W. H. Moses, Lane City, Texas.

"FLORIDA FIRST" QUEENS—Prices, April, May and June: Untested, 1, $1.50; 5, $7. Tested, 1, $2.50; 5, $12. Only "select" queens of bright three-banded Italian stock; healthy, prolific and gentle. Yard located on Merritt's Island and inspected by State Board. No disease in territory. R. C. Boswell Mgr.,
Indian River Apiaries, Wilson, Fla.

QUEENS, QUEENS, from my old leather-back Italian queen. Ready to ship after April 15. She is the head of my apiaries. Untested, $1.25; tested, $2.50; select tested, $3.00. More than 12, prices on application. Guaranteed safe delivery. O. O. Wilder & Son,
Rt. 2, Box 14, Corpus Christi, Texas.

QUEENS OF QUALITY, from the famous black belt of Alabama, the section suited by nature to the production of queen bees. Three-banded Italians, bred for honey production, disease resistance and gentleness. There is no disease in my neighborhood. Entire satisfaction guaranteed. Descriptive circular on request. Untested, $1.25; tested, $2.00.
P. M. Williams, Ft. Deposit, Ala.

QUEENS—Day-old and untested. Bees, 2-lb. packages. Thompson safety cages. Resistant Italians. Circular ready.
James McKee, Riverside, Calif.

THREE-BANDED ITALIAN QUEENS—Select untested, $1 each, $12 per dozen; 1-lb. package with queen, $3; 2-lb. package with queen, $5. Safe arrival and satisfaction guaranteed.
W. T. Perdue & Sons, Rt. 1, Ft. Deposit, Ala.

FOR SALE—My 1922 Golden Italian queens and bees, the hustling kind, second to none. They must satisfy or money will be refunded; Price, untested, $1 each, $10 per dozen or $80 per 100; tested, $1.75 each.
E. F. Day, Honoraville, Ala.

NUCLEUS AND PACKAGE BEES—Can fill all orders promptly. 2-frame nucleus, $3.75; 3-frame nucleus, $4.50. Packages: 2 pounds bees, $3.75; 3 pounds bees, $4.50. Add $1 for queen with package or nuclei. No bee disease in territory. Guarantee safe delivery.
Rosedale Apiaries, Rt. 2, Alexandria, La.
J. B. Marshall & H. P. Le Blanc, Props.

TRY ACHORD'S Package Bees and Queens. Price list by return mail.
W. D. Achord, Fitzpatrick, Ala.

SEE my large display advertisement on page 115. Jes Dalton, Bordelonville, La.

BEES AND QUEENS after May 15; one-fourth with order, balance C. O. D. Untested Italians, $1.25 and $1.50; tested, $2; 2-lb. package without queen, $5. If shipped on Hoffman frame, 50c extra. Birdie M. Hartle,
924 Pleasant St., Reynoldsville, Pa.

FOR SALE — Nuclei and 2-pound package bees; also Italian queens. In extensive apiary business here since 1905.
Allenville Apiaries, Allenville, Ala.

100 PER CENT QUEENS, bred from extra select Jay Smith breeder; larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction, and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1, $1.25; 6, $7; 12, $13; 25 to 100, $1 each.
H. Peterman, R. F. D., Lathrop, Calif.

REDUCE EXPRESS CHARGES—Buy nearer home. Two pounds Italian bees with queen on comb of stores, $5.75. Prompt delivery in May. Safe arrival guaranteed. Send for queen circular.
Ross B. Scott, La Grange, Ind.

WE BELIEVED in former years that we had the best Italian queens obtainable. "We still believe it." Mr. H. E. Crowther, Jefferson, Ohio, a large commercial honey producer, writes: "They are fine specimens, indeed, and very resistant to foulbrood." We are making the price this year in reach of all. Untested, $1, select untested $1.25, tested $2, select tested $2.50. We will sell virgins at 50c. We have breeders from Italy, and can furnish either from Americanized or imported stock.
F. M. Russell, Roxbury, Ohio.

WE are now offering our bright Italian queens at $1 each, or 10 per cent less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write for prices on package bees. We will have them in season.
Graydon Bros., Rt. 4, Greenville, Ala.

PACKAGE BEES, $1.50 per pound; untested Italian or Carniolan queens, $1.25 each. See larger Adv. Free circular. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

DIEMER QUEENS, Liberty, Mo., $1.00 each Guaranteed.

QUEENS, package bees and nuclei. We solicit your advanced orders, large or small, for 1922, and can give you the same prompt service in future as in past. Our early queens in March, ready for your unpacking time, shipped on short notice. Untested queen, $1.50; tested, $3; 2-pound package bees, post paid, $4.80; by express, f. o. b. Sandia, 2-pound package, $3.75; 2-comb regular nuclei, $3.75. Add price of queen wanted; 25 cents less from price on queen with package bees and nuclei; either pure strain golden or three-band.
Dr. White Bee Company, Sandia, Texas.

FOR SALE—Spring delivery, 1922, 2 lbs. bees and young three-banded Italian queen, $5. Special price on 2-lb. queenless packages. Health certificate with each shipment. Satisfaction guaranteed.
J. L. Leath, Corinth, Miss.

BEES—100 colonies for sale.
E. F. Atwater, Meridian, Idaho.

BURLESON ITALIAN BEES and QUEENS in 2 and 3-lb. packages; 1 2-lb. package with select untested queen, $5; 25 or more, $4.50; 1-3 lb. package with select untested Italian queen, $6.25; 25 or more, $5.75. Ten per cent with order, balance 10 days before shipment; 1,000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed..
T. W. Burleson, Waxahachie, Texas.

FOR SALE—75 colonies bees in 10-frame Langstroth hives; now packed, plenty stores.
W. C. Ridings, Lawrenceburg, Ind.

GOLDEN QUEENS. GOLDEN—1922 price: untested, one, $1.25; doz., $12. Select untested, one, $1.50; doz., $15; tested, one, $2.50, doz., $27.50. Pure mating and safe arrival guaranteed in United States and Canada. Booking orders now.
Tillery Bros., Georgiana, Ala.

FOR SALE—Early package bees, nuclei and queens. Shipping season from March 1 to June 1. We handle 1,800 colonies. No disease. Loveitt Honey Co.,
602 N. 9th Ave., Phoenix, Ariz.

NUCLEI and Cypress hives for 1922 delivery—Three-frame black or hybrid bees, Italian queen, $5.00; 3-frame Italian bees and queen, $5.50; 3-frame black bees and queen, $4.00; 3 pounds black bees and Italian queen on comb of honey, $5.50. Cypress hives complete; 5 10-frame, $12. Full depth supers complete, five 10-frame, $7. Prices on other sizes upon request. I own the timber and manufacture the hives, with no middlemen involved. Book orders now, so you can name shipping date to suit yourself. One-third with order to guarantee acceptance. Reference: Toombs County Bank, Lyons, Ga. Good farm for sale cheap.; 660 acres. Terms to suit purchaser. Otto Diestel, Elza, Ga.

BEES in 2-pound packages, our specialty for 1922. Now booking orders See ad elsewhere for prices. Caney Valley Apiaries
J. D. Yancey, Mgr., Bay City, Texas.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault. Prop.

FOR SALE—400 stands clean bees, extracting equipment; good location; for reason write. The Oregon Apiary Co.,
Nyssa, Oregon.

ITALIAN BEES—Full colonies with Italian queen, $15; two for $25. Three-frame nucleus with queen, $6.50. Three-pound package with queen, $6.50. No disease. Safe arrival and satisfaction guaranteed.
Van's Honey Farms,
Van Wyngarden Bros., Props.
Hebron, Ind.

WRITE US number of packages or nuclei you may be in need of. We will be glad to give you our best prices; also amount of express. We believe we are so located that we can make you a substantial saving.
R. V. Stearns, Brady, Texas.

SEE Thagard's back to Pre-War days prices on queens and bees elsewhere.

"ACE-HIGH" three-banded Italians hustle. Bred from excellent stock. No effort or expense spared to produce quality. No disease. Prices reasonable. Send for descriptive circular *now*, before you forget.
A. G. Van Ronzelen,.
Route 2, Box 212, San Antonio, Texas.

THREE-BANDED ITALIANS ONLY—Untested $1.25 each, $12 per dozen; tested queens $2 each, $20 per dozen. 2-frame nuclei, with untested queen, $4.50.
Jul. Buegeler, New Ulm, Texas.

FOR SALE QUICK—Fifty colonies bees; good condition; good honey strain; no disease. Prices reasonable.
Duane Shaw, Palestine, Ill.

FOR SALE—Our well-known strain of pure Italian bees and queens. They are great honey gatherers and wonderful disease resisters. Send for free circular and price list.
M. C. Berry & Co.,
Box 697, Montgomery, Ala.

QUINN'S QUEENS OF QUALITY—Have no superior. "There's a reason." Are Mendelian bred, good qualities accentuated. Gray Caucasians, gray Carniolans, most gentle of all, prolific, hardy, vigorous, disease resisting, white comb builders—they deliver the goods.
Chas. W Quinn, Powhatan, Va.

LATHAM'S QUEENS are well-bred Italians. She-Suits-Me queens will please you. Get in your order early. The discount of 20 per cent will continue till May 1, and will then be positively withdrawn for the season. Prices for untested queens from May 15 to June 15 $2 each, 10 or more $1.75 each. After June 15, $1.50 each for 1 to 9; $1.30 each for 10 to 24; $1.25 each for 25 to 49; $1.20 each for 50 to 99; $115 for 100 queens. See full advertisement in January number, page 38. That discount makes my prices low. I offer the discount so that I can know in advance the number of queens I am to have ready each month. When a queen breeder knows in advance he can afford to give better prices, since that knowledge permits him to produce his queens at less cost.
Allen Latham, Norwichtown, Conn.

UNSURPASSED ITALIAN QUEENS, ready June 1: Untested, 1, $1.25; 6, $7; 12, $12.50; 50, $50; 100, $95. Tested, 1, $2; 6, $11. Every queen is mated and laying before she is mailed.
J. D. Harrah, Freewater, Ore.

FOR BEES, queens, nuclei, packages, see page 182 of this issue. Annual Hubam sweet clover seed, guaranteed and scarified, delivered for $1 per pound.
Curd Walker, Scotts Station, Ala.

FOR SALE—20 colonies bees; first class; bargain. Harry Klaffenbach, Muscatine, Ia.

FOR SALE—Golden Italian queens; untested, about May 1: 1, $1.15, 6 for $6.50; 12 or more, $1 each; tested, $2 each; select tested, $3 each. No disease. No bees for sale.
D. T. Gaster, Rt. 2, Randleman, N. C.

CARNIOLAN QUEENS—None better. Select tested, $2.50 each; select untested, $1.25 each. Also choice Italians, same prices. Send for circulars.
Geo. W. Coltrin & Son, Mathis, Texas.

LARGE leather colored 3-banded Italian queens; 10-year selection, bred for honey gathering; gentle, hardy and long-lived. Price, select untested. 1, $1.25; 6, $6.50; 12, $12. After July 1: 1, $1; 6, $5;; tested $1.50 each. Write for price on large orders. Free booklet "How to Transfer, Get Honey and Increase."
J. M. Gingerich, Kalona, Iowa.

2-POUND PACKAGES 3-banded Italian bees, with queens, $4.75 each, 10 or more $4.50 each; 25 or more $4.25 each. Bees shipped in Root cages with syrup feeders. No disease. Safe arrival and satisfaction guaranteed
J. J. Scott, Crowville, La.

PINARD'S QUALITY BRAND QUEENS are the convincing kind. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

BLACK BEES of good stock for comb-honey production; 3-lb. package with queen, $5 each, postpaid. Safe delivery guaranteed.
Carl L. Wilson Apiaries, Mount Vernon, Ga.

SELECT ITALIAN QUEENS ONLY—Tested, $2.50 each; untested, $1.25 each. Satisfaction guaranteed. Send for circular. Also have choice Italians, same prices.
Geo. W. Coltrin & Son, Mathis, Texas.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for illustrated price list.
Elton Warner Apiaries, Asheville, N. C.

QUEENS—3-banded Italian; also golden; the thrifty kind. Untested, $1.50; 6, $7.50; 12, $13.50; tested, $2.50; 6, $13; 12, $24.50; select tested, $4; 6, $22; 12, $41.50. Write for prices after July 1. No disease. Safe arrival and satisfaction guaranteed.
P. O. Watkins, Cullasaja, N. C.

FOR SALE—30 colonies of Italian bees and supplies. E. W. Robinson, Jr.,
1454 23rd Ave., Rock Island, Ill.

BY RETURN MAIL—Tested queens by return mail, $2.50 each; reared last fall from our well known strain of three-banded Italians; none better. Uutested queens ready to mail April 15, $1.50, $13.50 per dozen. Safe arrival and satisfaction guaranteed; also no disease ever in this locality. J. W. K. Shaw & Co.,
Loureanville, La., Box 72.

PACKAGE BEES—Italian or Caucasian queens bred for heavy production. Safe arrival guaranteed. Prices on application.
Sarasota Bee Co., Sarasota, Fla.

MOTT'S NORTHERN BRED ITALIAN QUEENS—Bees by pound in June. Plans "How to Introduce Queens" and "Increase," 25c. E. E. Mott, Glenwood, Mich.

TRY PINARD—He's the one that breeds for quality. Root's strain. Attractive prices. See larger ad. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top-notchers in size, prolificness and color. After June 1, prices as follows: Untested $1.25 each, 6 for $7; select untested $1.50 each, 6 for $8.50; select tested $3 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment.
Buckeye Queens, Zoarville, Ohio.

QUEENS—Bright, three-banded Italian. We are now booking orders for the season of 1922. Shipments of queens this year commenced on March 15. All queens are mated in standard full-sized nuclei. We operate four thousand standard full sized nuclei. Capacity and output this season five thousand queens per month. We own, operate and run for extracted honey in the States of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output to make shipments promptly as and when promised. We guarantee safe arrival of queens. Prices: Mated, untested queens, 1, $1; 6, $5.50; 12, $9.60. In larger quantity, 75c each. In quantity of 100 or more, write for special price. Terms, 10 per cent deposit on booking order, balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations); Claus Spreckels Building, No. 703 Market Street, San Francisco, Calif.

SWEET CLOVER SEED

YOUR CUSTOMERS will like Atwater Honey.

FOR SALE—Annual white sweet clover seed. Quality good and prices right. See large ad. elsewhere in this Journal.
M. C. Berry & Co.,
Box 697, Montgomery Ala.

HUBAM spells prosperity for the beekeeper. 100 pounds prepaid for $50. See our add on page 141.
Blair Brothers, Rt. 4, Ames, Iowa.

HUBAM CLOVER SEER—Guaranteed purity; grown by ourselves; certificates of purity and germination furnished. 1 lb, $1.; 5 lbs., $4.50; 25 lbs., $21.25; delivered prices. Write
The Foster Honey Co., Boulder, Colo.

FOR SALE—Genuine scarified Hughes strain Hubam clover seed, $2 per pound.
J. P. Hansen, Otranto, Iowa.

BIENNIAL SWEET CIOVER SEED in the hull at 5c per pound, or 5 pounds postpaid for $1. Sow a little and get it started around each apiary.
Stover Apiaries, Mayhew, Miss.

ANNUAL WHITE SWEET CLOVER (Hubam).—Reduced to $1 per pound. See our Ad., page 171, this issue.
F. A. James Clover Seed Co., Newbern, Ala.

HONEY AND BEESWAX

YOUR CUSTOMERS will like Atwater Honey.

FOR SALE—Wisconsin No. 1 white honey. In 10-lb. pails, 6 to a case, 15c pound; 5-lb. pails, 12 to a case, 16c pound.
Julius Gentz, Wabeno. Wis.

HONEY FOR SALE—In 60-lb. tins, water white orange, 15c; white sage, 13c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment from New York.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—Extracted honey; clover 15c per pound, amber 10c, two 60-lb. cans to case; amber in barrels 8c; in 5-case or 5-barrel lots 5 per cent discount; in 10-case or 10-barrel lots 10 per cent discount.
H. G. Quirin, Bellevue, Ohio.

HONEY—Atwater sells fine alfalfa-clover honey, extra strong cases, case of two 60-lb. cans, $12; case of twelve 5-lb. pails, $7.80, all f. o. b. here. Ten-lb pails all sold out; plenty of the others on hand.
E. F. Atwater. Meridian. Idaho.

FOR SALE — White and amber extracted honey; also comb honey. Write for prices. State quantity wanted.
Dadant & Sons. Hamilton. Illinois.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

SUPPLIES

YOUR CUSTOMERS will like Atwater Honey.

FOR SALE—To further reduce our large equipment, we offer a full line of new and slightly used Jumbo and Standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease.
The Hofmann Apiaries, Janesville, Minn.

SUPPLIES—List supplies you need and I'll quote lowest prices.
Burhans' Apiaries, Waterloo, Iowa.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

QUALITY first standard brood frames. Satisfied customers say they can pay more money, but better frames are not to be found. Prices as low as the lowest. Sample Hoffman brood frames 15c, postpaid,
F. D. Bowers, Sugar Grove, Pa.

FOR SALE—50 10-frame and 10 8-frame supers. Complete for 4¼x1⅞ sections. Nailed and painted. First check for $40 takes the lot.
The Blue-hive Apiaries, Preston, Iowa.

FOR SALE—400 lbs. best beeswax in cakes.
Edw. A. Winkler, Joliet, Ill.

WATCH next issue for our new patent brood frame, nailer and wirer, the thing for which every beekeeper has been waiting. You can buy Jumbo straight hanger frames at the Voss Wood Shop, Exira, Ia., for $7.45 per hundred, and other prices to match. Send for circular and prices.

ADAPTABLE BEEHIVES are sound in principle and are practical. For free information address
Geo. P. Wood, Peekskill, N. Y.

DON'T take any chances with your checks. Get this low-priced check protector; does work of $50 to $100 machine. Made to carry in check book. Price $1.50 postpaid.
F. R. Anderson, Upsala, Minn.

GOOD second-hand 60-pound cans, two cans to a case, at $5 per 10 cases.
Meineke, 3852 N. Kenneth Ave, Chicago, Ill.

FOR SALE—A few colonies of good bees.
Meineke, 3852 N. Kenneth Ave, Chicago, Ill.

FOR SALE

YOUR CUSTOMERS will like Atwater Honey.

SELL anything I have. What do you need? I have dovetailed standard comb honey supers 4¼x4¼x1⅞ beeway sec., new nailed and painted, 10-frame, 1 complete without sections, $1.60; 5 or more, each $1.50; same as above, used 8-frame, 1 $1; 5 or more, each 90c. Excelsior wood covers, used, nailed and painted, 1 10-frame, 75c; 5 or more, each 65c. Used 8-frame dovetailed hives, newly painted, serviceable, as new, one complete with frames, $3; 5 or more, each $2.50. More supplies of several kinds for sale. What do you need? Write me. If I have it it is cheap. Dadant & Sons' supplies at Dadant prices. Send for catalog, just out. Many new things you have never used. Large-order prices on application.
Chas. M. Boothby, Griggsville, Ill.

FOR SALE OR EXCHANGE for pure Buff Orpingtons or Barred Rocks, 1 Root 8-frame automatic reversible extractor, International engine, Barnes' combination saw; all used two seasons; about 150 hives, supers, quantity drawn comb and foundation.
Dixon, Keewatin, Ontario, Canada.

ROBBING PREVENTED or stopped. J. A. B. entrance guards do the trick. Return mail, one $1. John A. Bloomgren,
Ridgway, Pa.

WANTED—To exchange gasoline engine, good as new, for Italian bees in 2-lb. packages.
F. J. Shotwell, Martelle, Iowa.

FOR SALE—Modern standard make typewriter, $50; or will trade for bees, queens, honey, or offer. Mrs. Ida Harris, Box 707, Tuscaloosa, Ala.

BEES FOR SALE—10-frame hives, Hoffman wired frames, at $12 each. Julius Gentz, Wabeno, Wis.

SURPLUS SALE—10 frame bodies (cypress) flat, 1 power saw frame complete, 3 oil burners, old Bee Journals, hunting magazines, taxidermy books, typewriter, No. 3 folding camera, 1 feed grinder, 1 big game rifle, guns, revolvers, pointer dogs, clay pigeons, etc.; Buff Orpington eggs for hatching. Complete description furnished and priced to move. G. M. Withrow, Mechanicsburg, Ill.

FOR SALE—Good second-hand 60-lb cans, two cans to a case, boxed, at 60c per case f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., 2163 Central Ave, Cincinnati, Ohio.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. Superior Honey Co., Ogden, Utah.

WANTED

YOUR CUSTOMERS will like Atwater Honey.

WANTED—To buy honey. Large quantities, cheap. Howe Food Products Co., Superior, Wis.

WANTED—200 or less colonies of bees, any style hive for spring delivery. When quoting price please remember 6c to 8c honey is in sight for next crop. Address A. W. Smith, Birmingham, Mich.

WOULD LIKE TO BUY some more good honey, some beeswax and also maple syrup. Paul Thomae, 1156 Third St., Milwaukee, Wis.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

WANTED—Honey, section, bulk comb and extracted. W. A. Hunter, Terre Haute, Ind.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials. American Bee Journal, Hamilton, Ill.

MISCELLANEOUS

YOUR CUSTOMERS will like Atwater Honey.

POULTRY

WHITE WYANDOTTE EGGS from choice heavy laying Hoganized stock, 15 $2 prepaid. Satisfaction guaranteed. Oscar Lovass, Box A, Westby, Wis.

BUFF ORPINGTON EGGS, $1.50 per 15; Bourbon Reds, $4.50 per 10. Grover Durnal, Memphis, Mo.

SITUATIONS

YOUR CUSTOMERS will like Atwater Honey.

WANTED—Man for comb honey production. State age, wages expected, and experience. B. F. Smith, Jr., Fromberg, Mont.

WANTED—By a large and financially responsible corporation operating at several different points in the states of California and Nevada, several experienced bee men and several helpers. Good wages (board and room) and permanent position, twelve months a year if work is satisfactory. Financial references furnished if desired. Give age, experience, and full particulars in first letter. Apply Western Bee Farms Corporation, 703 Market St., San Francisco, Calif.

WANTED—By the 10th of April, one helper and one all-around beeman, with some experience in queen rearing, willing to work under my system of raising superior queens. State height, weight, age, experience and wages wanted in first letter. C. I. Graham, Yuba City, Calif.

WANTED—Experienced beekeeper; give salary expected, and references. Paul Secher, Rt. No. 5, Box 23, Fort Collins, Colo.

WOULD TRADE good farm land in eastern Oklahoma for complete apiary. Frank Durkee, Ottawa, Ill.

WANTED—A partner to manage an established bee business, 1,200 colonies, 3 apiaries. Healthy location and convenient. Must have some capital. Or may let on shares the first year. References exchanged. W. B. Gehrels, Box 27, Puntarenas, Costa Rica, Central America.

WANTED—Four men for the coming season, experienced in comb-honey production, to work in our apiaries in Montana. Give reference, experience and wages expected, first letter. Steady work for right men. Weber Bros.' Honey Co., Blackfoot, Idaho.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted. W. A. Latshaw Co., Clarion, Mich.

REAL ESTATE

YOUR CUSTOMERS will like Atwater Honey.

BETTER FARMS on better terms, Alabama Lime Lands. Best schools and highways; long growing seasons; low tax rate. If interested, write Farm Section, Chamber Commerce, 701 Bell Bldg., Montgomery, Ala.

BENNETT'S 3-BAND ITALIAN QUEENS

The busy kind, gentle, prolific and disease-resisting.

Untested, 1, $1.50; 12, $1.25 ea., 25 or more, $1 ea.

Tested, 1, $2.25; 12 or more, $2 ea.

Satisfaction guaranteed. Health certificate with each shipment. Can ship by the 15th of April if weather conditions are favorable.

W. A. BENNETT APIARIES,
Box 216, Hattiesburg, Mississippi

Let us tell you about the California Gold Medal Queens, The Queens with the Pedigree.

Our hardy, immune, prolific strain of 3-banded leather colored Italians. Developed from the world's best strains by careful selection and tested under California conditions for five years, with excellent results. My specialty will be breeding stock and every queen produced will receive my personal care and inspection. Now receiving orders for the season of 1922, which will be filled in the order of their receipt. Write for catalog and prices.

THE COLEMAN APIARIES,
Geo. A. Coleman, Prop.,
924 Spruce St., Berkeley, Calif.

BEES AND QUEENS

Ready now, 3-banded Italian queens, the famous Dr. Miller and my own stock. Prices: Untested, $1.25 each, 6 for $7, 12 for $13. Select, 25c each higher; clipping free. Tested, $2 each, 6 for $11; 12 for $20.

Write for prices on larger lots.

3-frame nuclei, with untested queen, $5.50; without queen, $4.25.

Bees, 1 lb., $2; 2 lbs., $3.75; 3 lbs., $5.25 (add price of queen to same).

As I have just got located in my new location, I am not booked very heavy for orders, so if you want bees and queens from the South early, give me a list of what you want booked, and date of shipment. A square deal to all my customers, new as well as old; 20 years' experience with the bees; 10 years rearing and shipping queens. Give me a chance. I will surely try to treat you square.

CURD WALKER, Scotts Sta. Ala.
(Formerly of Jellico, Tenn.)

ITALIAN QUEENS

From one of the largest apiaries in Nebraska, for prices that the best can be had.

Untested queens during May and June at $1.50 each; during July, August and September at $1 each, and prices on large orders. We guarantee safe arrival of all queens.

THE BROOKSIDE APIARIES
O. E. TIMM, Prop., Bennington, Nebr.

High Quality Queens, Nuclei and Package Bees

Untested queens $1.25 each; $13.50 per doz.; 25 or more $1 each.

Select untested, $1.50 each, $15.00 per doz.; 25 or more, $1.15 each.

Select tested, $2.25 each, $25 per doz.

2-frame nucleus, $4.25; 3-frame nucleus, $5.75.

1-lb. package, $3.50; 2-lb. package, $4.25; 3-lb. package, $5.75. Add price of queen wanted with nucleus or package. Fullest satisfaction guaranteed.

Read what this customer says:

"Dear Mr. Bornhoffer: We want to tell you how greatly pleased we are with the nuclei we got of you this spring. Those we received of you a year ago this spring far excelled those received from other shippers of nuclei in the South, and this year again yours are outstanding ahead in every way of those received from others. Both years your bees have been noticeably gentle, non-swarming, and great honey-gatherers." (Name on request).

FRANK BORNHOFFER, Mt. Washington, Ohio

NO CASH WITH ORDER

Progress Trees and Shrubs are so trustworthy that you pay after you get them. Quality that counts and a service that helps. Write for catalog without delay.

PROGRESS NURSERIES
1318 Peters Ave., Troy, Ohio.

CHADWICK'S QUEENS

THREE-BANDED ITALIANS ONLY

At quality-sustaining prices. Reared, caged and mailed without being touched by hands. Properly fed, ventilated, and stand shipment. From Selma, Calif., to Hankow, China, 47 days in the mails, is my unequaled record. One, $2; three, $4.50; six, $8; doz., $15; fifty, $60; hundred, $110. I guarantee shipments in North America.

GET MY NEW BOOKLET

Big Essentials in Successful Beekeeping

Read what leading beekeepers say of it:

"I think you have the book well named 'Big Essentials,' and in my judgment you have hit the big essentials."—E. R. Root.

"I can find no criticism to make of your statements. * * * I regard your discussion of these as sound."—Frank C. Pellett.

"It is well written and the views you express are thoroughly sound and good."—W. J. Sheppard.

"It is mighty good stuff."—J. D. Bixby.

"It is well written and has many good points."—M. H. Mendleson.

Price (paper covers, 40 pages), $1 per copy.

P. C. CHADWICK,
Box 186, Selma, Calif.

QUEENS
Bright Three-Band Italian

ANNOUNCEMENT TO BEEKEEPERS

QUEENS
Bright Three-Band Italian

We are now booking orders for queens for the season of 1922.

Shipments of queens this year commenced on March 15, 1922.

All queens are mated in standard full-sized three-frame nuclei.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output this season is five thousand queens per month.

We own, operate and run for extracted honey in the States of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens to make shipments promptly as and when promised.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens. Any queens arriving dead at destination will be replaced without charge.

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In larger quantity, 75c each.

In quantity of 100 or more, write for special price.

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References by permission: The A. I. Root Company of California, No. 52 Main St., San Francisco, California, and No. 1824 East Fifteenth St., Los Angeles, California; The Diamond Match Company, Apiary Department, Chico, California; The Western Honey Bee, No., 121 Temple St., Los Angeles, California; Bees and Honey, Hutchinson Building, Oakland, California; The Beekeeper's Review, Lansing, Michigan. Banking references upon request.

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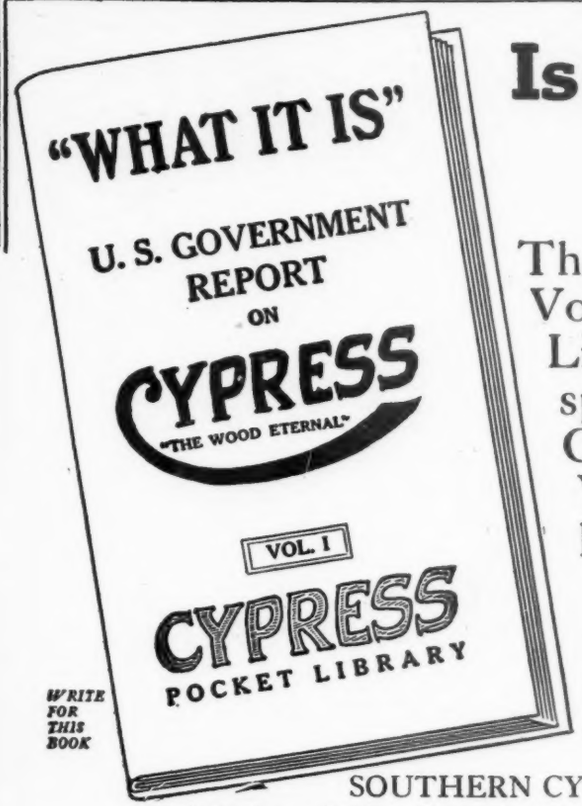

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